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FEBRUARY, 1935

STATISTICAL DATA OF THE ELECTRIC LIGHT AND POWER INDUSTRY

Compiled Monthly by the Edison Electric Institute—Covers 100% of the Industry

DURING THE MONTH OF DECEMBER

	1934	1933	%
Kilowatt-hours Generated* (net)			
By Fuel	4,552,614,000	4,433,690,000	+ 2.7
By Water Power	2,929,460,000	2,485,360,000	+17.9
Total Kilowatt-hours Generated	7,482,074,000	6,919,050,000	+ 8.1
Additions to Supply			
Energy Purchased from Other Sources	156,772,000	195,387,000	−19.8
Net International Imports	76,433,000	69,404,000	+10.1
Total	233,205,000	264,791,000	−11.9
Deductions from Supply			
Energy Used in Electric Railway Departments	61,168,000	65,028,000	− 5.9
Energy Used in Electric and Other Departments	115,774,000	109,649,000	+ 5.6
Total	176,942,000	174,677,000	+ 1.3
Total Energy for Distribution	**7,538,337,000**	**7,009,164,000**	**+ 7.5**
Energy Lost in Transmission, Distribution, etc.	**1,412,230,000**	**1,318,438,000**	**+ 7.1**
Kilowatt-hours Sold to Ultimate Consumers	**6,126,107,000**	**5,690,726,000**	**+ 7.7**
Sales to Ultimate Consumers (kw-hrs)			
Domestic Service	1,223,762,000	1,147,047,000	+ 6.7
Commercial—Small Light and Power (Retail)	1,192,323,000	1,137,914,000	+ 4.8
Commercial—Large Light and Power (Wholesale)	2,969,462,000	2,661,895,000	+11.6
Municipal Street Lighting	205,916,000	212,393,000	− 3.0
Railroads—Street and Interurban	417,796,000	387,266,000	+ 7.9
Railroads—Electrified Steam	64,347,000	63,127,000	+ 1.9
Municipal and Miscellaneous	52,501,000	81,084,000	−35.3
Total Sales to Ultimate Consumers	6,126,107,000	5,690,726,000	+ 7.7
Total Revenue from Ultimate Consumers	$163,806,700	$156,127,100	+ 4.9

DURING TWELVE MONTHS ENDING DECEMBER 31st

Kilowatt-hours Generated* (net)			
By Fuel	53,291,098,000	47,476,277,000	+12.2
By Water Power	31,241,055,000	31,782,810,000	− 1.7
Total Kilowatt-hours Generated	84,532,153,000	79,259,087,000	+ 6.7
Purchased Energy (net)	3,045,103,000	2,652,837,000	+14.8
Energy Used in Electric Railway and Other Departments	2,013,132,000	1,902,423,000	+ 5.8
Total Energy for Distribution	85,564,124,000	80,009,501,000	+ 6.9
Energy Lost in Transmission, Distribution, etc.	**14,782,344,000**	**14,255,893,000**	**+ 3.7**
Kilowatt-hours Sold to Ultimate Consumers	**70,781,780,000**	**65,753,608,000**	**+ 7.6**
Total Revenue from Ultimate Consumers	$1,837,046,000	$1,773,415,600	+ 3.6
Important Factors			
Per cent of Energy Generated by Waterpower	37.0%	40.0%	
Average Pounds of Coal per Kilowatt-hour	1.45#	1.45#	
Domestic Service (Residential Use)			
Average Annual Consumption per Customer (kw-hr)	631	604	+ 4.5
Average Revenue per kw-hr (cents)	5.30¢	5.49¢	− 3.5
Average Monthly Bill per Domestic Customer	$2.79	$2.76	+ 1.1

BASIC INFORMATION AS OF DECEMBER 31st

Generating Capacity (kw)—Steam	23,708,900	24,042,200	
—Water Power	9,021,700	8,999,200	
—Internal Combustion	468,500	453,000	
Total Generating Capacity in Kilowatts	33,199,100	33,494,400	
Number of Customers			
Farms in Eastern Area (Included with Domestic)	(534,203)	(507,522)	
Farms in Western Area (Included with Commercial—Large)	(209,751)	(206,036)	
Domestic Service	20,484,232	20,004,098	
Commercial—Small Light and Power	3,727,478	3,697,324	
Commercial—Large Light and Power	526,853	527,656	
All Other Ultimate Consumers	69,974	66,437	
Total Ultimate Consumers	24,808,537	24,295,515	

* By courtesy of the U. S. Geological Survey with deductions for certain plants not considered Electric Light and Power Enterprises.

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The Federal Trade Commission and So-Called Utility "Write-Ups"

Commission's Statements Confused, Misleading and Inaccurate—They Rest on Definitions which Constitute a Picayune Measurement of Reasonableness of Transactions During the Greatest Period of America's Industrial Development — Facts Are Subordinated to Political Expediency

By Bernard F. Weadock

Vice President and Managing Director, Edison Electric Institute

AFTER an eight-year examination of public utility companies, the Federal Trade Commission, in a series of final reports, is reporting to Congress. These reports are broadly publicized, as the commission serially issues releases to the press. The commission, so far, has issued more than 250 releases dealing with the public utilities.

In its 253d release (dated Feb. 5, 1935), issued shortly after Congress convened, the commission dealt with and referred to so-called "write-ups."

The release covered a selected list of holding, sub-holding and operating companies. Of the selected 91 operating companies, the commission stated that the companies "had at the final dates of examination assets with a ledger value amounting to $3,987,845,063, of which $3,306,893,610 consisted of fixed assets. It was found that the fixed assets of those companies were written up in value $608,918,570, or 22.6 per cent. Additional write-ups amounting to $230,476,773 were found in other operating companies in connection with the examination of their holding companies."

Of the 91 names on the release of Feb. 5, only 74 are actual operating companies. The other 17 are the names of holding and sub-holding companies.

It is utterly impossible to arrive at the combination of companies listed by the commission which will give either "write-up" figures it mentions. The commission states that in addition to the 91 companies other operating companies were found to have written up their assets, but the names of these companies are not given in any publicity release or report.

The commission itself apparently encountered difficulty with its own figures. On Jan. 10, 1935, it had issued Public Utilities Release No. 246, which stated:

"This Commission's examination of 91 operating companies with combined assets of nearly $3,307,000,000, discovered write-ups and other improperly capitalized items amounting to not less than $842,995,000. In other words, the value of capital assets which, based upon cost, as near as it could be ascertained, was $2,463,989,267, was written up 34.2% to $3,306,863,610."

This reduction in the "write-up" of over 11 per cent within the period of approximately a month confirms the unreliability of the commission's own figures.

In its final printed report, the commission again published a list of 91 operating companies. This apparently constituted the group referred to in the news release of Jan. 10. The names on this list do not coincide with the names of the 91 companies published in the Feb. 5 release. There are 52 names of actual operating companies which appear on both lists. There are 39 operating company names on the list in the printed report but not on the Feb. 5 release. There are 25 operating company names on the release of Feb. 5 which do not appear in the printed report. The commission omitted from its lists several other operating companies it had examined, which were completely ignored in figuring the percentage of write-ups, and some of which actually had write-downs.

The reader of these releases and reports may well be pardoned in arriving at the conclusion that the presentation of its figures by the commission constitutes an impenetrable arithmetical enigma. Yet, the public and some public officials freely use these "write-up" figures as dependable, reliable and accurate.

In an effort to reconcile the figures published by the commission, detailed study of *all* the published reports of the commission relating to the Power Inquiry, including testimony, exhibits and statements, has been made by the Edison Electric Institute. No picked samples of operating companies were chosen to be mixed up with holding companies, nor were any companies omitted that had been examined. Had the commission made a complete, full and fair analysis of all the operating companies examined by them, the net result, as is shown in Table I, would have been a total write-up in the neighborhood of 12 per cent on total assets. Is there any industry or business in the United States that can show such a small proportion of "write-ups" over the past half century of rising values, using the same basis for their determination?

What Constitutes a "Write-Up?"

The Federal Trade Commission in Vol. 36, page 468, defines a "write-up" in the following language:

"Write-ups and write downs—The term 'write-up' is used in this summary in three senses, viz: (1) An upward adjustment of book values of assets made by the company, either arbitrarily or on the basis of ap-

praisals; (2) the excess of the book values or apparent costs of investments that were paid for in part or whole with the company's securities, whose market values were below par, over the amounts of cash for which the investments could have been obtained from the same source; (3) the excess of the book values of the company's investments over their costs *to the vendors* (italics ours). The first kind is purely internal. The excess in the second kind is in reality discounts on the company's own securities disguised in book values of assets. The third kind includes the apparent profits or losses of the vendors, as well as the discounts on the company's own securities issued in payment. The qualifying word 'apparent' is used because the vendor's real profit or loss depends upon the prices at which the vendor can resell the securities received from the purchaser in payment, and upon the expenses incident to such sale."

In other words, the commission determines from an accounting standpoint that the amount of appreciation or so-called "write-up" consists of (1) excess value over cost, (2) value reflected by physical appraisal where such appraisal is in excess of cost, (3) excess of value of consolidated company over book value of component companies, (4) any value reflected upon the books of the company no matter upon what it is based if it is actually in excess of the cash as reflected by earlier books or cost of a predecessor company.

The United States Supreme Court, in the Minnesota rate cases (230 U. S. 352, 454), Mr. Justice Oliver Wendell Holmes speaking of the law of present value, said:

"It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law."

The same Court, speaking as to whether utility rates are necessarily based on the plant account or the capitalization as shown by the books of the company, as early as 1898, in the case of Smyth vs Ames (169 U. S. 466, 544) stated:

"If a railroad corporation has bonded its property for an amount that exceeds its fair value, or if its capitalization is largely fictitious, it may not impose upon the public the burden of such increased rates as may be required for the purpose of realizing profits upon such excessive valuation or fictitious capitalization."

TABLE I—FACTORS IN "WRITE-UPS"

Assembled as well as possible from a diligent analysis of the printed testimony of the individual hearings, the following items make up the net total of "write-ups":

FACTOR IN "WRITE-UPS"	FOR 91 COMPANIES	FOR 137 COMPANIES
1. Discovery Value of Gas and Oil Lands	$41,042,462	$41,042,462
2. Increase by Revaluations, Against which Securities Have Been Issued	159,886,939	224,618,741
3. Revaluations Creating Reserves and Surplus	87,282,919	122,611,850
4. Cost to Buyer in Excess of Book Value of Securities or Properties Acquired	112,724,113	131,682,506
5. Recognized Intangibles Capitalized	73,603,935	78,703,727
Total	$474,540,368	$598,659,286
6. Unallocated Items	15,428,000	15,428,000
Total "Write-Ups" as Claimed in Testimony	$489,968,368	$614,087,286
Total Assets	$4,354,111,082	$5,679,816,000
"Write-Ups" are % of Total Assets	12.7%	12.1%

Many other cases of the U. S. Supreme Court and the courts of the several states might also be cited in support of the quotations referred to. The Supreme Court in its latest decisions adheres to the principles stated.

In contrast to and in apparent disregard of the decisions of the United States Supreme Court, the commission has repeatedly stated that these so-called "write-ups" affect rates when regulatory bodies, who from actual experience are more familiar with the subject, know that it does not. In regard to fair value of utility properties and the reasonableness of the rates, the commission from the beginning has stated that its examination "does not purport to go into questions of the fair value of the property of these public utilities (i. e. the operating companies) or of fair value of return or reasonable rates for services rendered . . . which would have required among other things an appraisal of all the property of the utilities in question."

At no point does the commission contend directly or indirectly that the relation of value upon a company's books is an unlawful act. The reflection of the value upon the books was in most cases an exercise of honest judgment and done in compliance with the provisions of law relative to it. The commission, however, seeks to cast a reflection upon such entries by stating they were "based on nothing more than optimistic judgment of the values of the properties being unified or as the result of so-called 'horseback' appraisals." Again, it apparently ignores the economic advance of the country during the period of its greatest growth. Many of the "write-ups" complained of occurred more than 20 years ago, and few were within the last four or five years. During the depression years in business, "write-downs" —not "write-ups" are the rule.

The commission's position is in strange contrast to that of the rest of the Federal Government, as is evidenced by the Treasury's write-up of $2,800,000,000, which write-up resulted from recalling the gold possessed by its citizens and reflecting upon its books a "profit" to it from the gold so taken. A further contrast between the condemnation of practices of utilities and what the Government has itself done under the term of "seigniorage" is afforded by the following editorial taken from the New York *Sun* of Aug. 28, 1934:

SEIGNIORAGE

"The Treasury daily statement for Aug. 24 discloses that seigniorage 'profits' now total $32,559,006, which is nearly 8 per cent of total Government receipts for the fiscal year to that date. The seigniorage item relates to silver purchased at prices under 50 cents an ounce and held against issues of silver certificates on a basis of $1.29 an ounce. The difference between the $1.29 and the cost of the silver is the seigniorage. To the extent that it brings the receipts nearer Government expenditures it is budget balancing by the simple process of marking up the book value of an asset and calling the mark-up income. Some people recall that the Government strongly criticized utility companies for like procedure which, in some instances, might have had greater justification."

Factors in "Write-Ups"

There are several classifications of "write-ups" included by the Federal Trade Commission in its study. In considering book costs, the commission ignored all economic factors such as receiverships, depreciations, economic benefits of mergers, or the economies of operation or benefits to the public resulting from lower costs of operations. For the 137 companies considered, which includes the 91 operating companies listed by the commission in its printed report,

plus the 25 later referred to and 21 others completely excluded in its computations, an examination of the record will show the broad classifications itemized in Table I, on the preceding page.

The item of "Discovery Value" relates to the value of acreage in the gas and oil fields which were acquired over a period of many years. At the time of the purchase of these lands in 1908, there had been little drilling and consequently the true value of the lands was unknown. Between the time of purchase and an appraisal by the State Geologist of the State of West Virginia in 1918, gas and oil had been discovered under the acreage, which naturally increased the value over and above the purchase price. The appraisal determined the value of the lands with the quantities of oil and gas scientifically determined to be there. It was an actual value, not a fictitious value. Yet, the Federal Trade Commission eliminates such value as a "write-up"; while at the same time the Internal Revenue Department recognizes these discovery values of gas, oil and other mining ventures in computing federal income tax liability.

The totals contained in items 2 and 3 —"Increase by Revaluations Against which Securities Have Been Issued" and "Revaluations Creating Reserves and Surplus"—reflect increases due to a determined value over book figures. There is nothing unique or unlawful in this method of reflecting value as distinguished from cost upon the books of a company. The Commission, by attempting to strike appreciation or so-called "write-ups" from the books, substitutes its judgment concerning the value of the property for that fixed by the Board of Directors of the several companies acting within their legal duty and moral right to reflect such values upon the books. It prefers books of account to United States Supreme Court decisions, State Supreme Courts, State laws, the judgment of State Regulatory Bodies and Boards of Directors. In the main, the "write-ups" found by the Commission were the reflection of the honest judgment of the Boards of Directors and based on facts to support that judgment. In a few instances, however, there have been what appears to be excessive valuations, for which no justification is attempted because they were not made according to the law of the land. The defense of the principle of "fair value" for utility property does not require the approval of those valuations not made pursuant to established law and not supported by facts.

Of Item 2 it should also be stated that while the table shows $224,618,741. as increase in values against which securities have been issued, it should be borne in mind that a large portion of this value represents enhanced cost over a period of years which were reflected in purchase prices between buyers. The valuations were to record on the books the payments for such increased value. A most important factor which must not be overlooked in connection with this class of revaluations is that millions in securities were not sold to the public but were retained by the parent company as investment in operating companies.

Item 4, "Cost to Buyer in Excess of Book Value of Securities on Property Acquired." In arriving at this figure, classed as a "write-up," little consideration or study has been given to the date or economic conditions existing at the time the seller recorded its cost or value upon the books of the company. The records will not show the large number of small companies purchased during the time nor the fact that many of the books of the owner, who was at the same time the president, lineman, meter reader and office boy, were incomplete nor will they show the number of such small companies, the owner of which either had no complete records or kept what records he had in his coat pocket. Little consideration has been given to the cost of rebuilding the small property so acquired and the value of uniting small units into a larger operating unit with attendant economies in financing, operating costs, and reduced rates to consumers. On this basis of calculation, Manhattan Island, with its skyscrapers, underground railways, elevated highways, electrified railroads, asphalt pavements, costly and pure water supply, is worth only the $24, rum and trinkets, given to the Indians. The Commission overlooks the increase in labor and material prices, which in the long run determine the value of physical properties, and disregards the fact that in the two-year period, from 1915 to 1917 alone, costs rose 75 per cent and have averaged about that same level for the past eighteen years. This increase in the basic elements of cost resulted in an appreciation in the real value of the then existing gas and electric properties by at least two and a quarter billion dollars.

Item 5, "Recognized Intangibles Capitalized" includes such recognized values as water rights, bond discounts, stock bonuses given with the purchase of bonds or preferred stocks in order to attract new capital and made necessary because of the huge sums of money required to keep up with the imperative demand of the public during that period for additional electric service. A mere tabulation of "write-ups" compiled from an examination of the books by an accountant guided by arbitrary definitions and without reflecting economic conditions of the time is a picayune yardstick for judging the soundness and reasonableness of the business transactions which were involved in building up the efficient private power systems of this country during the age of the greatest expansion of America's industrial development. That "write-ups" of this class are erroneously labeled is best shown by the typical example of the actual effect of applying these definitions to the Mississippi River Power Company, the operator of the Keokuk Dam, the first great hydro-electric development of the day, involving engineering operations of hitherto unattempted magnitude, as given by the following statement by Mr. James F. Fogarty, President of The North American Company:

"The tabulation is also open to misunderstanding with regard to a figure of $21,909,500 shown as applicable to operating subsidiaries. The Federal Trade Commission's statement accompanying the tabulation makes it clear that this item refers entirely to transactions in connection with the construction of the Keokuk Dam of Mississippi River Power Company recorded on the books of that company as of July 1, 1914, or 11 years before it became a subsidiary of The North American Company. This amount included engineering fees, contractors' overhead and profit, financing and underwriting expenses, and costs incidental to providing a market for the power . . . in 1925 the entire capitalization of Mississippi River Power Company was more than substantiated by an engineering appraisal."

Actual Values—Not "write-ups" Govern Rates to Consumers

In its press release, the Federal Trade Commission adopts a false inference; namely, that these "write-ups" have increased rates to the public.

"It has been indicated in this chapter" the report continues, "that in many states there is little, if any, effective regulation of operating companies, so that obviously book values might very readily be considered as the actual value of property in connection with rate matters. Indeed, the public authority in such matters often has no means of determining the actual cost of utility property to a system, so that book values, which may include large amounts of write-ups, improperly capitalized intangibles and inflation, of which they have no knowledge, may

influence them, even if only psychologically, in determining property values for rate fixing."

Many of these statements, reflecting upon the character and integrity of the officers of the various State Public Utility Commissions, are unreservedly and unqualifiedly false. It presupposes on the part of the State Commissions the same attitude attributed by the Federal Trade Commission to the utility companies themselves; namely, that if an opportunity to do wrong was presented, this opportunity has been availed of and the wrong has been done.

In its investigations of "write-ups" the Trade Commission went back many years; in one instance to the year 1889. This is rather ancient history. At that time the average rate for domestic electric service was 23 cents per kwhr and the cost of living stood at 70 per cent of the 1913 average. Last year (1934) the average had declined to 5.3 cents per kwhr. On the other hand, the cost of living had risen to 138 per cent of the 1913 average. During this 45-year period the price of electricity dropped 77 per cent, and during the same time, the cost of living (to use the commission's own formula) was being "written-up" by 79 per cent, a difference in result of 156 per cent.

This investigation has not dealt with economic conditions of the country as a whole, nor these companies in particular, and it might not be amiss to reflect for a moment on what the country was doing in an electrical way since even the year 1924. Seven million additional homes were connected to the utility lines. One million new stores, offices and small factories were served. The farmer's benefit in the use of electricity increased sixfold. Thousands of small communities which had had only limited electric current during part of the day or no electricity at all were given the same service as that enjoyed by the large cities. Industries were no longer hampered by the unavailability of cheap and reliable power. The uniformity of electric service was so thoroughly established that with only minor exceptions, one could move from Maine to Florida or from New Jersey to California and be assured that practically every electric appliance could be used in the new location. By the establishment of interconnections of systems, combined with the diversification of the sources of power, interruptions and failures of current practically ceased. During the past decade the price of electricity to the average domestic user has declined by nearly 26½ per cent. While the write-ups were going up, the rates were coming down.

Valuation of the Railroads

The experience that the electric light and power industry is being subjected to is but repetition of history. The same political charges of unfair rates and gross over-capitalization that are now being made against the electric and gas companies were current against the railroads 25 years ago. The charges resulted in a law directing a detailed valuation of all railroad properties. Mr. L. C. Probert, vice-president of the Chesapeake and Ohio Lines, writing in the "New Outlook" for November, 1934, summarized the sad experience of the owners, the public and the Government itself resulting from this legislation:

"When valuation was undertaken by the Government the country was solemnly assured that it would take two years and cost $8,000,000. It took twenty-four years and cost $200,000,000, almost all of which was paid by the people who use the railroads because it necessarily went back into the service charges and the remainder was paid by the taxpayer in general.

"First, it is said that the railroads are over-valued and that service charges to the public are based on capital which doesn't exist. The truth about that is that the Interstate Commerce Commission, after spending twenty-four years and two hundred million dollars, has reported that the fair value of the railroads is twenty-one billions. They are, however, capitalized for only nineteen billions."

Present Investigation Magnifies the Bad

It seems a great pity that for so long a period the Federal Trade Commission should have subordinated facts to political expediency. Its investigation up to the present moment has placed this industry before a mirror which magnifies and emphasizes the bad features and blurs out the good ones. An investigation which has run for years has been restricted purely to a book study of a most constructive, progressive and efficient public serving industry.

To complete the investigation without a true evaluation of the accomplishments of the electric industry when only technical and little understood bookkeeping and accounting criticisms and implications have been forthcoming is a failure of duty. In presenting these criticisms it would have been a matter of great public interest and concern to have developed the economic conditions which existed at the time many of the things complained of transpired. The difficulties which were being encountered at that time, together with the engineering and operating accomplishments, would make a thrilling story in itself. An understanding of the vision, courage and fortitude of the pioneers who developed our electric industries and thereby brought one of the greatest gifts to the people that has ever been bestowed might well have brought praise to replace or at least offset these accusations.

Other Factors Besides Rate Reductions Necessary to Load Up Excess Generating Capacity

APROPOS the question of excess generating capacity and the repeated statement that greatly reduced prices for electricity would increase consumption to outrun supply, it is worth taking note of the experience of the municipal plant of the city of Tacoma, Wash., in building up consumption with low rates.

The city of Tacoma has had rates at TVA rate levels since 1915, or for a period of twenty years. This is ample time to develop the effect of low rates on consumption. In that city the average use of electricity for 1933, at an average price per kilowatthour sold of 1.78 cents, was only 1180 kwhr per domestic customer, as compared with an average for that year in the states of Tennessee, Georgia and Alabama of 700 kwhr per domestic customer per annum.

If these three states with their 540,000 domestic customers were to do as well as Tacoma has done after twenty years, the market increase for electricity would be 260,000,000 kwhr, which would furnish the load for about 75,000 additional kilowatts of generating capacity. The five-year plan outlined by the Chairman of the TVA before a Committee of Congress in May, 1934, called for building 3,000,000 kilowatts of generating capacity—40 times the amount stated above.

Industrial use of electricity must be looked to for the principal load for large power projects. The city of Tacoma has generating plants with a combined capacity of 148,000 kw. The total output from these plants for 1933 was 229,400,000 kwhr. Therefore the plants operated at a capacity or use factor of 14.2 per cent. A capacity factor of 45 or 50 per cent is a reasonable possibility in that area. In other words, Tacoma, with low rates, has been unable during the past several years to increase consumption to outrun its power supply.

Government and the Public Utilities

By Wendell L. Willkie

President, The Commonwealth & Southern Corporation

Address at a Joint Meeting of The Economic Club of New York and The Harvard Business School Club, January 21, 1935, New York City

UNDOUBTEDLY, everyone present here tonight is well aware of the problem which confronts the electric utility industry in the United States. It has aroused widespread discussion; its solution will affect, for good or ill, some five million American citizens who have invested some fourteen billion dollars in this industry. More significant still the answer ultimately adopted will have a vital bearing upon the future course of our country's economic development.

Briefly explained, this problem results from the crystalization of the issue of private or public ownership of our utility industry. It is not a new question—but it is one on which there was never better opportunity than the present for full examination and enlightenment, for an analysis of the facts and a test of these two systems on the basis of the plain indisputable figures of their respective records.

My sincere belief is that the American citizen and the American taxpayer want the facts about the question. Speaking as one connected with the electric utility industry I may say that if we can present the facts, as I honestly know and understand them, I do not believe we need be apprehensive about the future of the industry, for facts carry with them their own prophecy; and in a country of free, intelligent people they become the unvarying instrument of final decision.

History of Municipal Ownership

First let us examine municipal ownership—it is as old as the business itself. In the fifty-odd years of the existence of the electric light and power industry in the United States there have been established altogether some 3900 municipal plants. More than half of these have been abandoned and only about 1800 remain. The percentage of mortality in the last 15 to 20 years has been higher. Of the 437 municipal generating plants established between 1920 and 1930, 323 or 74 per cent had been sold or abandoned by 1932. These municipal plants throughout their history have been free from taxation yet today the average rate

MR. WILLKIE

for all classes of service by municipal plants is 15 per cent higher than the rate for electric energy from electric utilities privately owned. It is true that they have favored the domestic at the expense of the industrial consumer and in the isolated instances, which are widely advertised, the low municipal domestic rates in practically all instances are made possible by a subsidy upon the industrial user.

Interruptions of service in municipal plants are frequent and inevitable except where such municipal plants are connected with the coordinated transmission systems of privately owned utility companies. The use of electric energy, with few exceptions, by customers of municipal plants is substantially less than that of customers of private plants. Few municipalities have done any promotional work in the sale of appliances and the extension of unprofitable rural lines by such plants is almost unknown. They pay no Federal, State, county or municipal taxes which equal 15 per cent of the income of the privately owned utility companies. By reason of such exemption from taxes every citizen of the United States whether or not a resident of the particular cities in which such municipal plants are located, is required to pay higher taxes. In municipalities where municipal plants are operated, particularly where the rates are as low as those of private utilities, the tax rate is materially higher than in many municipalities where privately owned utilities operate. For instance, take the much heralded Tacoma, Wash.

Tacoma (Washington) Municipal Plant

A taxpayer owning property of a valuation of $5,000 pays taxes in Tacoma of $133 per year while in Chattanooga, Tenn., the owner of a comparable property pays $96.60 per year in taxes. Let me give you some other comparable figures on a $5,000 valuation basis:

Seattle (Municipal Plant)	$170	Atlanta (private)	$108
Kansas City, Kansas (Municipal Plant)	123	Nashville (private)	76

Those, however, who seek to lure us along the pathway of public ownership of public utilities, when these arguments are presented to them, answer that the reason for this showing on the part of municipal electric plants is because they are disconnected operations. That we should establish regional large scale governmental power development such as the Ontario Hydro Commission operation. As our distinguished fellow townsman, Governor Al Smith, would say, "Let's look at the record":

Ontario Hydro Commission

Ontario, because of its favorable location with respect to Niagara Falls and the even flowing rivers of Northeastern Canada, has the most favorable situation on the American continent for the development of low cost hydro electric energy immediately adjacent to market. This enterprise was commenced in the early years of the century as a result of arguments strikingly similar to those heard in the United States of today. Its proponents asserted that it would be necessary to have a public power authority to insure the bringing of cheap hydro electric power to the people. The Public Authority was not to supplant private enterprise but merely to serve as the now familiar yardstick, to see that private

companies kept their prices within reason. The social benefits of the plan were those which were stressed, and according to its founders, the building of a huge political organization was not even considered. Another advantage which these men claimed as their followers claim in the United States today for the public undertaking was that the municipalities would soon own the electric facilities debt free, and thus emerge from "interest-slavery" to private corporations. The Provincial authorities would at all times have control over the disbursement and receipt of funds, and the Hydro Commission would serve only as a trustee for the municipalities, taking "surplus" power from Niagara Falls and making it available at the city gates at cost.

Indeed, if the names were changed the publicity attending the beginnings of the Ontario hydro project could easily be mistaken for today's discussions of similar projects in the United States. There were the same innuendoes tending to discredit the accomplishment of privately owned utilities, the same flattery of the communities to be served, the same assumption of virtue as champions of the people and the same extravagant promises as to cost.

Let us see, based on the Ontario experience, how likely these claims are to bear the test of time. It did not remain a mere yardstick for the measurement of private operation. Its history is one of continuous encroachment upon the field of private enterprise. Starting in 1910, supplying power to seven municipalities, it has bought out practically the entire privately owned utility industry in Ontario under the forced threat of public competition if such sales were not made. Every major city is now served by the Hydro and today it serves 85 per cent of the total customers in the Province.

Political Manipulation

It also was to be a fine example of institutional democracy free from the evil effects of political manipulation. As Dr. Arthur E. Morgan, chairman of the TVA, has said:

> "The very life of the American nation is threatened by the custom of political patronage. The more widely public activities are extended, and the more government has to do with the management of our lives, the more sinister is this evil force."

Despite the predictions that the Hydro would be free from such politics, the political history of Ontario in the twentieth century could be written in the terms of the history of Hydro. In 1903, the party out of office in need of a "radical" appeal to the voters, adopted the Hydro issue as its campaign platform and rode to power on this issue. With the exception of a brief period between 1921-1924, this party remained in control until last year, when the election turned largely on the issue of Hydro. The only record of a defeat to the Hydro in all these years was the victory of its opponents in 1921, with the subsequent blocking of a grandiose plan of a publicly owned railway enterprise.

Failure of "Self-Liquidating" Feature

What about the self-liquidating feature? Hardly a speech in advocacy of our presently proposed governmental operations is made but what we are reminded that the program will be self-liquidating in twenty-five years. The original amortization period of the Ontario project was to be 30 years. At the end of this time the electric facilities would belong to the people free of debt. The program has been in effect just for that long. Is it free of debt? The Hydro Commission itself has liabilities of 266 million dollars against undepreciated assets of 283 million dollars. As to the municipalities, their liabilities now total 50 million dollars against undepreciated assets of 90 million dollars. Thus the whole system undepreciated, is on the books at 374 million dollars and 30 years after the founding of the Hydro it has outstanding obligations of 316 million dollars. These liabilities exceed $500 per electric customer, on which the debt service is over $30 per annum. Is this the much heralded freedom from "interest-slavery?"

Let us compare the original picture of this unassuming agent for the municipalities of Ontario with the picture of the commission as it is today—a super power company with an indebtedness equal to 40 per cent of the total Provincial debt; a tremendous political power, with the potentiality of vitally affecting the welfare of the people of Ontario; a public agency which has reached far out from its original function, and driven virtually all private electric companies from the Province, as well as interesting itself in electric railways, gas and paper manufacturing.

Increase in Cost of Ontario Power

But perhaps some of you would be willing to forget the inconsistencies of the prediction as compared with the fulfillment if the result had been to produce cheaper electric energy for the people. During the early years of the Hydro, power was delivered to Toronto at a cost of $15 a horsepower-year. At this time, the Hydro was purchasing its power from privately-owned generating plants, at extremely reasonable rates, but, obsessed by the notion that a public plant would be cheaper, it commenced the building of its own plant at Niagara Falls in 1918. This plant, estimated to cost some $25,000,000, is now on the books at nearly $80,000,000 and the unparalleled waste and inefficiency which surrounded its construction has resulted in an increase in cost to municipalities of more than 100 per cent. As a result, the cost of power delivered to Ontario in 1933 was over $30 a horsepower-year, as against the initial cost of $15.

To complicate this already unsatisfactory situation, the Hydro far over-estimated the demand for power, and has contracted for the delivery of some 300,000 additional horsepower. Under the terms of the contract it must take this power whether it has any use for it or not, with the result that it is forced to secure additional load, whether or not it be profitable business. It is selling power in some instances at approximately a third of the actual cost of this power to the commission. It is therefore not surprising the recently appointed chairman of the Ontario Hydro Electric Commission, Mr. Stewart Lyon, announced that the power supplied to municipalities and other customers for the year 1933 cost $4,221,000 more than the commission received for it. Who is going to pay that four million loss if not the citizens of Ontario? They will either be taxed or else the cost of electricity will be increased to a still greater extent, but no matter which way the wind blows, these losses must and will be paid for by the people.

In addition to deficits of over $2,000,000 in 1932 and over $4,200,000 in 1933 by the Hydro, the municipalities which distributed this energy had a deficit in the year 1933 of $621,000, and 20 per cent of all of the municipal bonds in the province of Ontario are in default, while practically none of the bonds of the municipalities in the Province of Quebec where there is private operation are in default.

Without boring you with the details of the figures, I have taken the average domestic rates of Ontario municipalities which receive their power from the Hydro and have applied the differentials in interest, taxes and depreciation, thus reducing the two rates to an exactly comparable basis and find that the domestic rate of the southern operating companies of The Commonwealth &

Southern Corporation to be substantially lower.

Let me give you just one additional fact about this operation—Hamilton, Ontario, is of comparable size to Chattanooga, Tenn.

If you lived in Chattanooga, Tenn., and owned a home assessed at $5,000 you would pay approximately $96.60 per year in taxes. If you lived in Hamilton, Ont., and owned a home of like value you would pay taxes of $185 per year. This differential is not inherent in the two countries because if you lived in Quebec where there is private operation and owned a similar piece of property, your taxes would be comparable to those in Chattanooga.

Parallel of Government and Privately Operated Railroads

Let's look for the moment at the deadly parallel of government and privately operated railroads in Canada. Do you realize that the publicly owned and privately owned railways of Canada make exactly the same charges for the same service and operate side by side under precisely the same conditions?

Do you realize that during the nine years 1923 to 1931 the Canadian National Railways, controlled by the government, failed by no less than $456,000,000 to earn the interest on its outstanding obligations, while during the same period the Canadian Pacific Railway, privately owned and operated, paid interest and dividends of over $401,000,000?

The taxpayers of Canada paid the same rate for the service of the government railway system as they would have if it had been privately owned and also paid in taxes almost half a billion dollars solely for the privilege of saying that they owned the Canadian National Railways.

With these records of municipal operation and the record of the Ontario Hydro Commission and railroad operation all so close at hand and the facts with reference to each so readily ascertainable, is it wise, is it prudent or fair to place a capital levy upon the investors in public utilities in the United States in order to bring about results which are so clearly demonstrable to be disadvantageous?

Vast Political Power of Employees of Government Plants

Does any resident of this City of New York need be reminded of the vast political power that comes through the organization of employees of publicly owned operations? If, in this country in which the rotation in office is one of the fundamental political beliefs, utilities become publicly operated there will be created a political organization entrenched in every community throughout the country, the power of which will be used not alone for the advancement of the project itself but also for the personal and political advancement of those in control.

Every sincere advocate of government projects has hoped that the particular one which he fostered would be free from these abuses, but I ask you to search your mind to find one in the history of this country that has not eventually fallen prey to the political manipulator. In addition, we all know that any public government service, no matter with what zeal or humility its leaders may desire otherwise, tends to become arrogant, truculent and arbitrary in its attitude toward those it serves. The "I issued the order—it must be obeyed" attitude is the inevitable accompaniment of bureaucracy and the vesting of independent power in the hands of public officials.

The Tennessee Valley Authority

Now for a few moments I would like to discuss with you the most notable of our proposed government projects in this country. I hesitate to do this in view of the presence of my very charming and learned friend, Mr. Lilienthal, and I do it only for the purpose of illustration.

Some 18 months ago Congress passed the Tennessee Valley Authority Act, which created the Tennessee Valley Authority and possessed the Directors of that Authority with the $125,000,000 investment of the Federal Government in the steam and hydro generating and nitrate plants at Muscle Shoals, Alabama.

In addition to bestowing upon the Authority this original Muscle Shoals development, Congress has appropriated for the Authority to date approximately $100,000,000. With these resources, representing a copious but only a preliminary quaff of the Nation's revenues, the Tennessee Valley Authority, on behalf of the Federal Government, is entering the electric power industry. Dr. Morgan testified before the appropriations committee of Congress that the Authority contemplates seeking additional appropriations of approximately $200,000,000 and the ultimate cost will be approximately $1,000,000,000.

By the terms of the legislation the Authority is granted, and has exercised, almost unrestricted discretion to expend these staggering sums of money for any purpose and in any manner, and without competitive bid, or further congressional action, which in its judgment tends to the hydro electric development of the Tennessee River and the economic upbuilding of the Tennessee Valley, an area comparable to that of New York State, comprising some 45,000 square miles in North Carolina, Virginia, Alabama, Tennessee, Georgia, Mississippi and Kentucky.

Since approximately 95 per cent of the Federal taxes from which such sums must be provided are paid by people not resident of that valley, and since these Federal taxpayers receive no direct benefit and probably no indirect benefit from such expenditures, it occurs to me that you—all Federal taxpayers—who are here tonight, should not be unwilling to hear the statements of one situated as I am, who does not seek to dissemble the fact that he represents some 300,000 security holders and some $500,000,000 worth of property which may be adversely affected by this program.

Reason for Passage of TVA Act

The TVA Act was passed because of the agitation which has arisen in the last few years against private utilities. The carrying forward of the TVA program to a point where it or other government projects will damage utilities further is likewise dependent on this agitation. I have sought many times to analyze the reasons for this agitation and it occurs to me that it arises from three general groups:

First: Those who since the great war have become enamored with European economic and social concepts and seek their application to American life. In this group we find many ardent and sincere advocates of public ownership of utilities and other forms of American business.

Second: Those who appreciate that any industry which serves 25,000,000 customers is fair prey for political attack and demagogy, particularly in times of economic distress and suffering, and therefore seek to capitalize this situation to the advancement of their political fortunes.

Third: Those both in public and private life who believe that in the several years prior to 1929 such grave abuses arose in the public utility business that the industry is but receiving its fair measure of punishment and that these abuses can be corrected and the public equitably served by no other method

than the entrance of the government into the business.

I have long since learned that seeking to convince the ardent and zealous advocates of public ownership of utilities and other business, modeled on some European ideal which is non-existent in fact, is a wholly futile and useless endeavor. Their beliefs partake of the nature of religious frenzy and a presumption of superior wisdom against which no amount of argument or factual presentation will prevail.

As to the second group—those who live by the fomentation of political issues—all men have come to know that the way to their conversion lies in the conversion of their political constituents, in which event they will become as ardent in their advocacy of private ownership as they were formerly of public ownership.

Question of Abuses in the Utility Industry

My principal concern tonight shall be with the third group, namely, those who believe with the overwhelming number of American citizens that despite all the furore and fever of the moment, the American tradition of confining government strictly to the functions of government and of leaving the operations of business, industry and commerce to private enterprise is the most salutary to the individual and the most wholesome and beneficial to the people generally, but who nevertheless have been led by subversive propaganda to the belief that abuses have arisen in the utility industry which can be corrected only through government ownership.

If it is true that notwithstanding the efficient service delivered almost universally by the utility companies, and notwithstanding the constant lowering of rates and progressive development of the industry in its technical and engineering aspects, and the effort and resourcefulness that have been put into it by thousands of technicians and employees, the claimed abuses have been so overshadowing and so grave that they cannot be rectified by the industry itself, or by the government through its regulatory function, and if government ownership will guarantee a correction of such abuses, then obviously there is great merit in this position.

However, before adopting government ownership on such an assumption, would it not be wise to examine the exact nature of those abuses and determine whether or not under existing government operation such abuses have been corrected?

It is claimed that in the several years prior to 1929 there were write-ups on the books of utility companies. In other words, by bookkeeping entry, property accounts were thus increased. There are some obvious defenses to this charge, namely, that it is perfectly justifiable to reconcile book value to actual value—as every man does who buys a piece of real estate which increases in value. It likewise can be said that such write-ups have absolutely no effect on rates unless they truly represented an increase in the value of the property, because rates are based on the actual value of the property; that in almost all instances such write-ups represented bona fide sale prices of properties; and it likewise can be said in mitigation of these write-ups that small in percentage though they are, they were made in the most frenzied period of speculation in our history when the best of men lost their judgment. However, despite these defenses and mitigations, I know of no utility leader today who will not seek to eliminate them if they are proven to exist as soon as appropriate Federal legal machinery is provided for so doing, and who, likewise, is not in favor of appropriate Federal regulatory laws to prevent their reoccurrence. Let me say that no tribunal has ever determined that there is any discrepancy between the property value of the utility companies of this country as a whole and their outstanding securities. Before seeking, however, the remedy of government ownership to eradicate this evil it at least may be illuminating to see what government operations have done in this regard.

Write-down of Muscle Shoals Book Value

The Muscle Shoals project cost the Federal Government $125,000,000, of which $60,000,000 was for generating plants and approximately $65,000,000 for the nitrate plants and other facilities. The hydro generating plant was built in a low cost period, having been started after the war and was completed in 1925. The TVA testified in the recent hearing before the Alabama Public Service Commission that it intended to put these generating plants on its books for rate making purposes for approximately $21,000,000; (it testified the week before in Tennessee that the figure for the same property should be approximately $25,000,000), or in other words, subsidize such operations by a bookkeeping process at the expense of the Federal taxpayer of from $60,000,000 to $21,000,000, or over 65 per cent.

The TVA is now engaged in the building of Cove Creek (Norris) and Joe Wheeler Dams.

Under the provisions of the Federal Water Power Act, utilities which build hydro electric dams, such as the Norris and Joe Wheeler Dams, on navigable rivers such as the Tennessee River, are required to make and have made provisions for navigation and such dams are just as useful for flood control as these government dams.

The TVA, however, plans to allocate, according to its latest statement on the subject, something over 50 per cent of the cost of its new dams to flood control and navigation and charge up only the remaining balance as the basis for the sale of hydro electric energy. The private utilities get no such subsidy, which subsidy of the TVA is entirely a bookkeeping entry at the expense of the Federal taxpayer, so far as the generating of power is concerned. Thus we see that in both private and in public operation, the temptation to arrive at conclusions by bookkeeping rather than by actual method is somewhat alluring, only it appears that the government outdoes the private industry. The one permitted its desire for a pretty balance sheet to lead it along the easy route of bookkeeping entries. The other allowed its desire to demonstrate that it could sell electric energy in a "yardstick" area cheaper than private utilities could sell such energy, to prompt bookkeeping entries which would yield the desired showing.

If it is true that any of the private utilities earned on the rate base made by book entries, in instances where such a rate base did not reflect actual increase in property value, and thereby levied for their stockholders a toll on the consumers of electric energy—by the same token, do not the write-downs of the TVA constitute a toll on the Federal taxpayers for the benefit of the particular consumers who are served with electric energy by the TVA?

Overbuilding of Generating Capacity

Another claimed abuse, or error of judgment, on the part of utilities prior to 1929 which has been the subject of much comment and adverse criticism, is that they imprudently overbuilt their generating capacity in 1929 and 1930 and now expect the consumer of electric energy to pay a legitimate return on such excess investment, and that against such excess generating capacity they imprudently and unwisely sold securities to the public. Perhaps sufficient foresight was not shown by the leaders of

the utility industry in anticipating either the presence or the length or depth of the economic collapse. They, of course, exercised no monopoly in this error. When the depression began to show its first signs in the fall of 1929 and the spring of 1930, many utility executives thought it the part of wisdom to suspend building operations. They were, however, called to a conference of the then President of the United States and most earnestly urged, both as a matter of patriotism and economic wisdom to continue such building activities—it being said to them that the depression was but a temporary let up in business and would be of short duration.

Many utility executives were, nevertheless, doubtful about the course suggested, but felt they should cooperate with the President's desire. I remember how one forceful, dynamic and attractive figure, Mr. Samuel Insull, said of such faint hearts that they were entirely mistaken; that it was impossible to overbuild the requirements of electric generating capacity for this country; that wisdom dictated compliance with the President's program; that the industry should sell such securities as were necessary to provide the money with which to do such construction work and that all would be well. He, of course, was woefully and tragically mistaken. But let us see what is happening in 1934 and 1935.

There is an excess generating capacity of 66 2/3 per cent in the Tennessee Valley—sufficient excess capacity to supply the electric energy requirements of all the industries, individuals and corporations of the city of Chicago, yet when some of us faint-hearted utility operators say it will take years to use up the present existing generating capacity without taking into account that which is being built, which will double the present excess, and the plans already laid for the building of additional dams, which will double again the newly created excess, as was the case in 1929 we are told that we are faint hearted and of little vision; that this excess capacity will be shortly absorbed and that the government is completely sound in selling government securities on the faith of the expenditures made for such generating capacity.

Regulation of the Holding Company

A great deal of resentment has been aroused in the minds of the public against utilities by the oft repeated charge that those who control such companies have created the holding company for avoiding regulation and in order that there might not be required disclosure of the records, books and accounts of such corporations. Although I think the charge is unfounded I readily subscribe to the principle that indivdual utility companies as well as holding companies should not alone make periodical reports of their operations but that at all times their records should be completely open to the inspection and examination of State as well as Federal regulatory bodies and that they should keep their books according to a uniform method of accounting. However, let us see the situation in regard to this Federal operation. TVA in public hearings both in Alabama and Tennessee before the public service commission of those states refused to accept any jurisdiction by such commission or to file any report with them. They have likewise announced that they are not subject to the regulations of the Federal Power Commission.

Among the minor charges which have assumed very large proportions in the public mind and have contributed very greatly to the present feeling about utility companies are that for many years prior to 1929 they established a propaganda organization and attempted to convince the public through public speeches, advertisements and various other methods, of the merits of their operations as compared with public operations. I would be the last to admit that a utility company should not have the right to make such public declarations and advertise and publicize the merits of its operations in such manner and ways as it should determine best. However, I want to say that as propaganda artists we have come to learn that we were the most immature and bungling amateurs. The volume of publicity issued by Federal bureaus having to do with power and kindred subjects has literally flooded the newspapers of this country in the last year.

One of the other offenses which in the good old days our critics discussed at great length and with considerable eloquence was the organization of corporations under the laws of Delaware. It was claimed that owing to the favorable attitude of that State toward corporations we secured charters with almost unlimited powers, which corporations operated in other States and with no adequate control, either by the State or Federal Government over such corporations. As a matter of fact, I had come to believe there was considerable merit to this criticism and consequently as far as our organization was concerned we abolished a great many of our Delaware corporations. However, I now find that styles have changed.

Corporate Charter of EHFA

When the TVA decided to organize its EHFA electric appliance sales organization, it obtained a charter for that corporation under the laws of Delaware and although I was for several years engaged in corporation practice and have organized many corporations under the laws of that State I bow in deep deference to the mind that imagined these chosen powers. Let me read to you from its corporate charter:

> To advance the general economic welfare of the nation.
>
> To manufacture, buy, sell, deal in, and to engage in conduct and carry on the business of manufacturing, buying, selling and dealing in electrical appliances and equipment and in goods, wares and merchandise of every class and description.
>
> To lend or advance money to, extend financial assistance to, accept bills of exchange from, endorse the notes and guarantee the obligations of, individuals, firms, corporations and/or others, with or without collateral security of any kind whatsoever.
>
> To the same extent as natural persons might or could do, to purchase or otherwise acquire, and to hold, own, maintain, work, develop, sell, lease, exchange, hire, convey, mortgage, or otherwise dispose of and deal in, lands and leaseholds.
>
> The business or purpose of the corporation is from time to time to do any one or more of the acts and things hereinabove set forth, and it shall have power to conduct and carry on business or any part thereof in this State, other States, the District of Columbia, the territories and colonies of the United States, and in foreign countries.
>
> The enumeration herein of the objects and purposes of this corporation shall be construed as powers as well as objects and purposes and shall not be deemed to exclude by inference any powers, objects or purposes which this corporation is empowered to exercise.

Sale of Electrical Appliances

You have heard much of late of the sale of electrical appliances, which makes me very happy, for we have always thought that promotional rates and the vigorous sale of appliances was one of the most effective methods of bringing about a larger use of electric energy and consequent continued reduction in domestic rates. However, for many years we had great difficulty with this program because the opponents of the utility industry charged that we were subsidizing the sale of appliances and thus prohibiting the dealers throughout the country from making a legitimate profit on the sale of such appliances.

In other words, we were charged with permitting our anxiety to build our load of current to lead us into the realm of unfair competition. As a result, a great deal of feeling grew up against the utility companies and in many states bills were introduced in the legislatures and in some states were enacted into law prohibiting the sale of appliances by utilities. Whether utilities were justly criticized for this operation I cannot say, although at times we perhaps did permit our zealousness to fall short of our higher ideals of fair practice. However, when the TVA came into existence and desired to sell appliances it "out Herod-ed Herod." It not only reduced, by one-half, the margin we had been maintaining because of the insistent demand of the small dealer, between the wholesale and retail price, but it also subsidized such sales by financing the buyer on low government interest rates.

I do not make these comparisons and contrasts for the purpose of minimizing the talents or energy or impugning the motives of the men engaged in forwarding the work of the TVA and government ownership of utilities. I admire their enterprise and industry, and respect them for the altitude of their aims. But I believe that in this country the principles of our private morals are no less immutable than the principles of our public morals. It is my judgment that human nature operates the same whether one is employed by government or whether one is employed by private capital. Honesty and integrity characterize in large preponderance both spheres of activity and influence. Restraint, regulation and control are required in each.

Abuse of Unrestrained Power

Given unrestrained and unregulated power in a non-competitive business, private enterprise or public officials sooner or later may abuse it. Public policy must be fashioned for the unusual as well as the customary instance. That is the reason I favor the regulation of both public utility holding companies and government operations because I believe that human nature is often weak and when men are engaged in non-competitive work, the teachings of the preacher, the priest and the rabbi have not been sufficiently inculcated to impose the required restraint.

Is it not reasonable to suggest, when we view either the reactions of human nature or look at the precepts of history, that moderation and limitation and checks and regulation are required equally for government as for its citizens, and that if government is to embark on untried adventures, chart a new course and engage in competition with the organizations and institutions of its citizens, its agencies should be subjected to the same or companion regulation? Certainly government should not avail itself of those recourses against which it, itself, has inveighed.

Thus we see that if abuses did occur in the electric utility industry that government operation gives no guarantee of their eradication. As that great genius, Thomas A. Edison so well said:

> "There is far more danger in public monopoly than there is in private monopoly, for when the Government goes into business it can always shift its losses to the taxpayers. If it goes into the power business it can pretend to sell cheap power and then cover up its losses. The Government never really goes into business, for it never makes ends meet, and that is the first requisite of business. It just mixes a little business with a lot of politics and no one ever gets a chance to find out what is actually going on."

Personally, I favor Federal regulation of utility holding companies and the issuance of their securities, together with adequate regulatory laws to eliminate any future prospect of the reoccurrence of any claimed evils of the past and insofar as can be anticipated, any evils of the future. This, however, is a vastly different program from abandoning the tradition of 150 years in this country—that government should remain entirely outside the field of private enterprise.

Regulation, Not Competition, Should Be Function of Government

The traditional function of government has been to regulate rather than to absorb and commandeer private business, or stifle and strangle it by vieing with it as a competitor. Upon that condition and their belief in the constitution of the United States and the decisions of the Supreme Court of the United States, our 300,000 security holders for whom I am Trustee, and more than four and a half million others have invested over $14,000,000,000 in the public utility industry in this country.

Rapid Development of Electricity

Such private initiative has advanced electricity to its present place in our home and industrial life. Edison completed his first generating plant for supplying electric energy in 1882, when steam was so securely enthroned as the source of power that none could foresee the great electrical development that would revolutionize the life of the people, give new forms of illumination and electrical entertainment, transform industry and greatly alter methods of transport and travel.

Considering past transitions, the electrical development came with remarkable rapidity. Electric power has been made available to the residents of cities, towns and farms, and the industrial requirements of the nation completely supplied. The United States today possesses 50 million horsepower of installed generating capacity and hundreds of thousands of miles of transmission and distribution lines. The electric utility industry has 24 million customers, most of whom are families. They use approximately 5 million electric refrigerators, 13 million radios, 2 million electric ranges and myriads of small appliances that tend to relieve the drudgery of household work. A larger percentage of the homes of America are supplied with electrical energy than in any other country of the world. The widespread availability of electric power has stimulated research and given new and improved products to the public.

Private operation of electric utilities has been technically efficient. Maximum power loads are available on instant demand, as well as during the normal periods of home and business lighting. "Outages" resulting from electrical or other disturbances have been practically eliminated. The supply of electric energy has been constant and reliable. This remarkable achievement has not come about by chance but through vision, inventive ingenuity and courage through years of patient toil and effort.

In this marvelous development all elements have played their part—the engineers designed and builded—the operating organizations managed and operated efficiently and effectively—the holding companies combined, coordinated, supervised and financed. Now, however, in this hour of tragic depression when all men whether they were investors in farms, bank stocks, industrial concerns, newspapers or utility holding companies have suffered great financial losses and are therefore, readily misled by the predictors of a future free of all loss—the baiter of utilities has selected the holding company as the particular object of attack.

The holding company represents the common equities of utility companies.

This common equity, the cushion behind the bonds and preferred stocks, is a necessary element in the stability and progress of utilities and makes possible the senior securities. If any sympathy is to be given to either class, the holder of equity securities should be the recipient because it is he who takes the risk which has made America's great industrial development possible.

Function of Holding Company

The holding company not alone financed and supplied coordinated centralized and scientific supervision, but it made possible the great inter-connected generation, transmission and distribution systems existent in this country today which are the admiration of electrical engineers throughout the world. England seeks to copy, in its grid system and TVA flatters in its imitation. I never read a clearer statement of this particular problem which the holding company solved than was contained in a letter to my predecessor from the world's most popular political leader.

On November 5, 1926, Franklin D. Roosevelt wrote T. W. Martin—

ROOSEVELT & O'CONNOR
120 Broadway
New York
at Warm Springs, Georgia,
November 5, 1926.

Mr. Thomas W. Martin,
Alabama Power Co.,
Birmingham, Alabama.
My dear Mr. Martin:

I am writing this to you in order to obtain information. As you have probably read in the papers, I have recently taken over the old resort known as Warm Springs and hope that soon there will be an extensive development. *We, in this and the neighboring communities are suffering from the usual high cost and inefficient service of small local power plants.*

Recently a new high tension power line has been put through within 6 or 8 miles of this place and running to Thomaston, Georgia. It is extremely difficult locally to learn the company which is the real owner of this new line, whether it be the Georgia Central Power and Light Co., or the Georgia and Alabama Co., I do not know, but the latest information is that it is at least a company controlled by the Alabama Power Co., or by the Southeastern Power and Light.

Discussion has taken place in regard to the supply of power and light to Manchester, Warm Springs, Greenville and Woodbury, Georgia, from this line, but it is impossible in this vicinity to find out the exact facts. If, therefore, you would be good enough to send me a line to tell me what the situation is and whether the new line is one of your subsidiaries, I would be very grateful. It seems probable, of course, that the consumption of light power at Warm Springs will materially increase in the future.

Very sincerely yours,
(Signed) FRANKLIN D. ROOSEVELT.

Thereafter, this particular isolated plant was purchased, made a part of the inter-connected system, the standard rates of which were put into effect, since which, time without number and only recently, this outstanding public leader has warmly praised both the quality of service and the rates charged.

I am the President of a holding company and I make that statement with pride, not alone because of the past achievements of these great organizations but because of the part they are playing today. By the passage of the TVA Act 500 million dollars of operating company property in the territory immediately adjacent to the TVA development belonging to the holding company system which I represent, was unable to finance itself.

The market value of their senior securities (bonds and preferred stocks, all of which were issued after showings made to Public Service Commissions that an equal amount of money was being invested in the property at the time of the issuance of such securities) today is almost 125 million dollars below the market price of such securities before it became apparent that the TVA bill would be enacted into law. It was obvious, therefore, that the operating companies in the affected area could not finance themselves and during the last four years The Commonwealth & Southern Corporation has advanced to these units for refunding and development purposes over 30 million dollars. In other words, it has been the holding company which has made possible the preservation of these operating companies, the lowering of their rates and their nationally heralded merchandise appliance sales program. It has been said to me but I cannot believe it to be true that the preservation of these operating companies by the holding company has engendered a feeling on the part of some government officials against the holding company.

Those who oppose the utility organization, whether they be holding companies or operating companies, assume an attitude of superior virtue and patriotism. They seek to paint us who represent private enterprise in the utility business as anti-social, unpatriotic and the despoilers of men. I yield to no government official, be he high or low, in my social obligations, love of country or fellow feeling for the struggling masses of humanity. I do not like to make personal references, but I want to say to you that no duty has ever come to me in my life, even that in the service of my country, which has so appealed to my sense of social obligation, patriotism and love of mankind as this, my obligation to say and do what I can for the preservation of public utilities privately owned. All that I have observed, all that I know and all that I read teaches me that I could do nothing nobler for the future financial stability and political good of my country or the social and economic well being of my fellow citizen than to stand firm and unafraid against this foolish fad and fancy of the moment.

Sales Training Contest Now On— The Utilities to Share in $2,400 Prizes

A MAJOR feature of the Electrical Housewares Program, a joint commercial effort of Edison Electric Institute and leading manufacturers of small appliances, is a Better Merchandising Contest with $2,400 in prizes. This amount is divided into four quarterly awards in three classifications of dealers as announced in the December issue of the E.E.I. BULLETIN.

The first quarterly contest is now on. The award is based on "the best plan for training of sales people for selling small appliances, and its application." The three divisions of retailers are departmentalized stores, other retail outlets and utilities. The first prize is $100, the second prize $50, and there will be five honorable mention prizes of $10 each. Other terms and conditions of the first quarterly contest are as follows:

1. Competition is open to all dealers in electrical housewares.
2. The first quarterly contest closes on March 31, 1935.
3. Plans must be submitted on or before April 15, 1935, to Commercial Department, Edison Electric Institute, 420 Lexington Avenue, New York City.
4. Reports may be in longhand if legible, but preferably typewritten.
5. The committee reserves the right to publish the reports of the winners and retain all reports.
6. The judges of the first contest are L. E. Moffatt, Editor, *Electrical Merchandising;* Miss Mildred Nichols, Graybar Electric Company; and T. L. Blanke, Merchandising Manager, National Retail Dry Goods Association.

Get Behind the Running Water Program

FEBRUARY starts the spring concentration in the Running Water Program. Chairman P. H. Powers of the Electric Water Systems Council is anticipating a much broader participation of the utility companies in promoting water systems. Last fall several thousand hot prospects resulted from activities. The spring follow-up together with added impetus given to selling through distribution of new broadsides will roll up satisfactory totals. Pumping equipment is included in the list of "approved" items which are subject to insured loans under the Federal Housing Administration and the cost of building the well also. A new broadside which will be ready in early March is a direct tie-in with the modernizing movement of FHA.

The council has now available an attractive, animated window display which flashes some selling ideas. The stream of "water" as indicated in the accompanying illustration is realistic enough to attract passers-by. Utility companies should have one in each store and office in rural and semi-rural districts.

A "filler" for the original Plan Book of the Running Water Program distributed last fall has been mailed to all commercial executives with information on spring activities. All companies having potential business for water systems are urged to participate. Those who mailed broadsides last fall will be interested in the new spring broadside which is available at $20.50 per thousand, f.o.b. New York.

Companies that did not distribute last fall may wish to take advantage of the earlier broadside which is on sale at 25 per cent off these quoted prices for the new mailing piece.

Here is opportunity for a contribution to better living in the rural districts through the promotion of electric water systems.—C. E. G.

Interrupting Rating Factors

AT a recent meeting of the EEI-AEIC-NEMA Joint Committee on Oil Circuit Breakers, the December 1933 table of interrupting ratings was revised. The new table is similar to the one published in the April 1934 E.E.I. BULLETIN, on page 138, with certain limitations proposed by NEMA after a year's experience in the use of the rating factors. The revised schedule of interrupting ratings is included in this article as Table I. The limitations of the revised table lie in the voltage classes of 15,000 volts and below, where the last three columns, 10,001 to 40,000 amperes—shown within the dotted lines, are to be omitted. For voltages above 15,000 volts, the complete table stands as it is. This does not affect the 100 per cent ratings of any breaker based on the standard operating duty.

The limitations are due to the difficulty the manufacturers would have in meeting some of the high current, low voltage rating factors in the original table since they have been unable to carry out the necessary development tests to prove these factors. No manufacturer at the present time has sufficient test data on hand to substantiate such ratings. The manufacturers have agreed, however, to determine a basis for rating factors in the above excluded class of breakers as fast as the necessary data can be obtained. It is felt that, a full and immediate test program to secure this information at once would be too costly and would not be justified in light of the present available business in this class of service.

Because of the acceptance by the Joint Committee of the requested change in the high-current, low voltage portion of the rating factor table, the Joint Committee requested the manufacturers to reconsider the remaining factors in the table and determine whether they can not be raised. This was agreed to by the NEMA members of the Joint Committee as being a fair proposal and will be further studied.

TABLE I

Interrupting ratings* for other than standard operating duties (standard duty cycles) shall be as specified in the following table:

Number of Groups	Number of Unit Operating Cycles	Percentage of Standard Interrupting Rating at Currents Specified**				
		0 to 5,000 Amp.	5,001 to 10,000 Amp.	10,001 to 20,000 Amp.	20,001 to 40,000 Amp.	Above 40,000 Amp.
		Successive unit operating cycles with 15-second intervals				
..	2	100	100	100	100	100
..	4	95	95	90	85	80
..	8	85	80	70	55	50
..	16	75	65	50	35	..
		Groups of two (2) unit operating cycles with zero*** second interval between operations and 2-minute intervals between groups				
1	2	90	75	75	65	60
2	4	80	75	60	45	..
4	8	70	65	50	35	..
8	16	60	55	40	25	..
		Groups of four (4) unit operating cycles with 0-15-60 second intervals between operations and 2-minute intervals between groups				
1	4	85	80	65	50	..
2	8	75	70	55	40	..
4	16	65	60	45	30	..

* For certain oil circuit breakers of non-oil tight construction, the rating may be based on an interval of two minutes instead of fifteen seconds.
** For breakers above 15 KV class, use the entire table. For breakers 15 KV and below, omit section within dashed lines and use ratings of table only up to and including 10,000 amperes.
*** Zero second shall be interpreted to mean no intentional time delay.
Note: It is intended that satisfactory performance of breakers will be obtained under the rating schedule suggested at rates of recovery voltage normally encountered in practice.

Municipal and Company Rates Compared

Differences in Physical Conditions and Policies Lead to Wide Diversity of Rates, Which Are Most Extreme Among Municipal Plants —If Taxes Are Considered, Private Companies Are Underselling Municipals—A Review of Dr. Warren M. Persons' Recent Study.

By William M. Carpenter
Economist, Edison Electric Institute

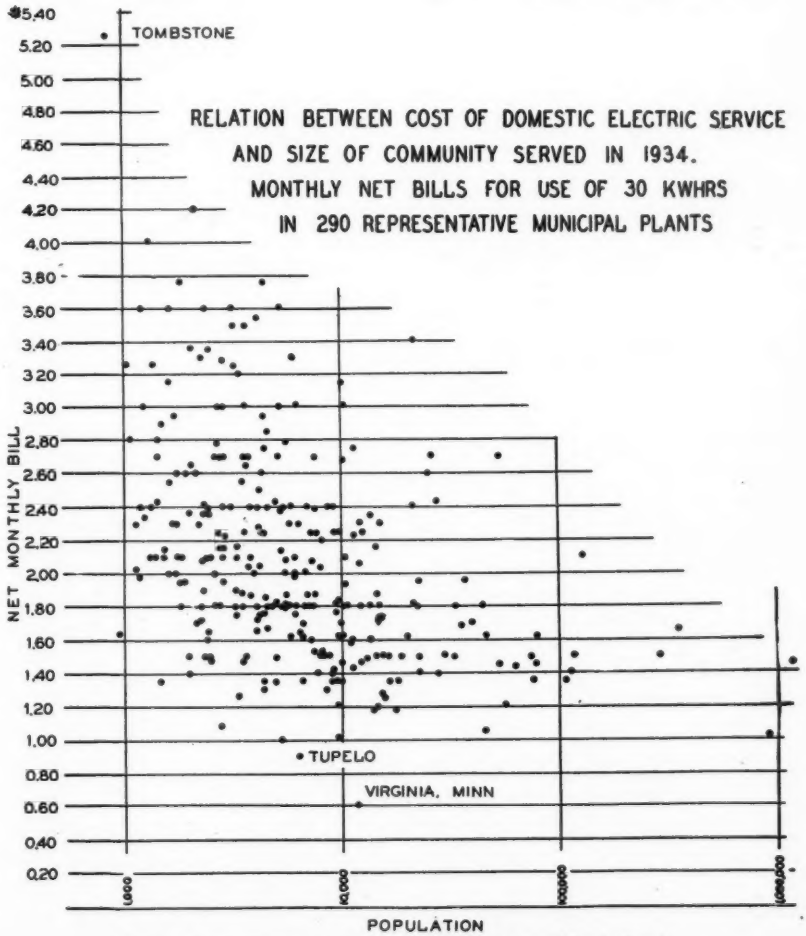
. . . it is evident that in the present municipal plants there already exist large numbers of "yardsticks" with which to appraise electric company rates and whose lengths are determined by local conditions. Each "yardstick," however, assumes a different size when measured by any one of hundreds of other "yardsticks," and to this bewildering array of standards the Federal Government is now adding still more. It is obvious that, when "yardsticks" disagree among themselves to the amazing extent indicated by Dr Persons' study, all manner of things may be proved by the shrewd choice of individual examples. It is also evident, however, that most companies have little to fear from fair comparisons.

MOST extreme among municipal plants, a very wide diversity of rates, depending upon climatic, economic and commercial factors, is evident in the rendering of domestic electric service in the United States, judging from statistics recently gathered by Dr Warren M. Persons,[1] consulting economist and former professor of economics at Harvard University.

The extraordinary spread of municipal rates is graphically shown in Chart 1, from which any "yardstick" between 2c and 18c per kwhr might be improvised and the inescapable conclusion reached that, by the crafty selection of a limited number of examples, any case may be proved either for or against electric rates under municipal ownership.

Dr Persons' survey of net monthly bills paid by residential customers of private and municipal plants in some 1800 places in the United States shows, however, that it is entirely feasible to make broad generalizations based upon a large number of comparisons restricted to towns which are similar in size, geographical location and economic characteristics and when these have been established, the much-advertised cheapness of municipally supplied electricity is shown to be sadly lacking. Furthermore, when the relative burden of taxation is considered, private enterprises are proved to be underselling the municipal plants. The survey also reveals, in many cases, evidence of political expediency in the subsidizing of small users of electric service at the sacrifice of a really promotional rate structure.

In an earlier analysis, Dr Persons emphasized the fact that "comparison of rates for electric service in different cities of the same state or different states, in which diversity of operating conditions is sure to exist, tells little or nothing as to whether customers in one city are more economically supplied with light and power than those in another city. . . . A still more emphatic note of



(Each dot represents a town or city having a municipal plant)

Chart 1—Even greater than the variations in company rates is the haphazardness of municipal schedules. If Tupelo is taken as "yardstick," what is the status of all of these other municipal plants?

[1] Persons, W. M., "Comparison of Net Monthly Bills and Rates for Specific Domestic Service of Municipal and Private Plants in the United States," published February, 1935, by the author.

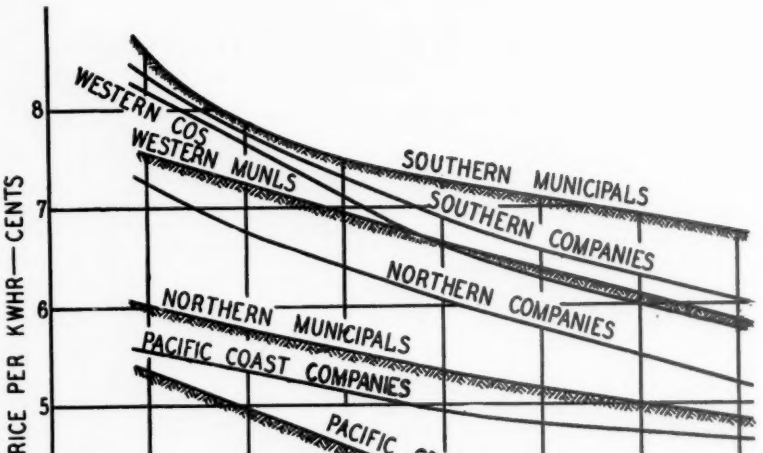


Chart 2—Geography Influences Rates—Taken as a whole, electric enterprises on the Pacific Coast have rates 18 *per cent below the level of those in the North,* 31 *per cent below those in the West and* 31 *per cent below those in the South*

caution must be addressed to those who compare the rates of individual plants, whether privately or municipally owned. The rates of one municipally owned plant are not a suitable yardstick for measuring the reasonableness of the rates of another municipally owned plant operating under different conditions, nor are the rates of one privately owned plant a standard for judging the reasonableness of other privately owned or municipally owned plants." [2]

[2] Persons, W. M., "Municipal and Private Electric Utility Rates and Taxes," July, 1933.

[3] For the 97 cities having a population of 100,000 or over, the range of distribution of all bills for 60 kwhr is from $1.90 to $6. For all of the 488 places in the Rate Book, half of the bills for 60 kwhr are less than $3.50 and half more than $3.50. The range is from about $1.90 to $7.20. For the 290 places served by private companies, the range is between $2.10 to $8.30, for the 290 municipal plants the range is between $1.20 and $9.50.

[4] The lowest rate in the United States is the municipal plant at Virginia, Minn., with its flat 2c. per kwhr. The highest in the study is the municipal plant at Tombstone, Ariz., with its corresponding "pair" Benson, Ariz., where the rates begin with 18c. per kwhr. Between these two extremes, any place can be selected to suit the requirements of the propagandist.

The fallacy of making individual comparisons without regard of economic conditions has been ignored by many investigators of the utility rate situation. A favorite method of presentation has always been the arrangement of cities according to size of population, regardless of location. Such a procedure compares Tacoma, Wash. (pop. 106,817), with Knoxville, Tenn. (pop. 105,802), when the mere accident of 833 people less would have placed it next to Peoria, Ill. (pop. 104,969), or of 896 people would have compared it with Canton, Ohio (pop. 104,906). Other comparisons arrange the places in order, with those having the lowest rates at one end and those with the highest at the other. This is a commendable method of statistical presentation and interests the lay reader in spotting his own particular city. It indicates no more justification, however, of the relative merits or defects of any particular rate structure than would the character of any particular individual be determined by his position in a line of people commencing with Tom Thumb at one end and ending with Primo Carnera at the other.

In his survey Dr Persons has departed from the usual procedure and taken all of the more important 290 municipal plants of the country and "paired" each one with the nearest town of similar size and characteristics in the same state, served by a private company. The number of these examples is sufficiently large to minimize the effect of freak instances and to permit the establishment of valid general averages. In addition, the net bills were computed for the 488 places whose rate schedules are given in the E.E.I. Rate Book. Monthly bills for 30, 40, 60 and 90 kwhr were computed for all these towns and the usual methods of statistical analysis applied to the results.

Wide Dispersion of Rates

"Rates vary with geographical location, accessibility to water and fuel; many other conditions affecting costs of plant operation, transmission and distribution of energy, as well as population of the city served," Dr Persons states. "There is a very wide dispersion of rates for plants in cities of the same population group.[3] The overall range of distribution of bills for 60 kwhr per month supplied by municipal plants covers an interval of $8.30 as compared with $6.20 for private plants, indicating much greater dispersion and lack of uniformity of the bills of municipal plants. But abnormally low bills and abnormally high bills for both groups of plants reflect highly special favorable local conditions, or, on the other hand, unfavorable conditions, such as operation in desert regions with high fuel and water costs.[4] The facts of wide dispersion of bills, and different degrees of dispersion for different groups of plants, reflect the widely varying conditions of operation and rate policies among cities. *Municipal plants and rates differ much more widely from each other than do private plants and rates. Wide dispersions of bills offer the opportunity for meaningless rate comparisons between picked groups of municipal and private plants, not carefully matched, too few in number, or chosen to give support for a favored conclusion."*

Geography Influences Rates

The 290 municipal plants and their corporate "pairs" have been arranged by

broad geographic regions and the results again emphasize the influence of economic conditions upon the general level of the domestic rate structure. Arranged in tabular form, the comparisons of arithmetical averages appear in Table 1 and the "medians" [5] in Table 2. The averages are also shown graphically by Chart 2. Taken as a whole, electric enterprises on the Pacific Coast have rates which are 18 per cent below those in the Northeastern region, 31 per cent below those in the West and 36 per cent below those in the Southeast.

Effect of Size of Community

There is a widespread belief that electricity should grow cheaper with the increase in the size of the community served. Dr Persons' study shows that this holds true only up to a certain point. The costs of residence service show decreases with each increase in population served until the city reaches about 60,000. Beyond this, offsetting factors making for higher costs of distribution begin to appear, which apparently nullify the advantages which might accrue from the greater density of population and consumers. This is graphically indicated by Chart 1, which shows the monthly bill for 30 kwhr in 290 representative places served by municipal plants.

When the Item of Taxation Is Considered, Private Companies Are Giving Service More Cheaply than Municipal Plants

Municipal plants are substantially tax-exempt, while in 1934 the private companies will repay at least 13 per cent of their gross revenues back to various governmental agencies in the form of taxes. When these enterprises are placed on the same footing by deducting 1 per cent from the municipals and 13 per cent from the companies, the results show a marked advantage in favor of private enterprise, which advantage increases with the consumption of current.

Municipal Rates Are Less Promotional than Company Rates

Beyond the first 40 kwhrs per month, all additional current costs less under company schedules than under municipal rates. This is evident from the incremental costs of the reported averages shown in Table 3 and may be stated as in Table 4.

In conclusion, it is evident that in the present municipal plants there already exist large numbers of "yardsticks" with which to appraise electric company rates and whose lengths are determined by local conditions. Each "yardstick," however, assumes a different size when measured by any one of hundreds of other "yardsticks," and to this bewildering array of standards the Federal Government is now adding still more. It is obvious that, when "yardsticks" disagree among themselves to the amazing extent indicated by Dr Persons' study, all manner of things may be proved by the shrewd choice of individual examples. It is also evident, however, that most companies have little to fear from fair comparisons.

[5] The "median" is the unit in the exact middle of a row arranged so that the smallest stands at one end and the largest at the other.

TABLE 1—ARITHMETICAL AVERAGES OF NET MONTHLY BILLS FOR RESIDENTIAL SERVICE, 1934

Sections	30 kwhr	40 kwhr	60 kwhr	90 kwhr
Northeastern (a) 102 companies	$2.18	$2.70	$3.62	$4.68
" 102 municipals	1.80	2.30	3.20	4.34
Southeastern (b) 39 companies	2.50	3.11	4.13	5.44
" 39 municipals	2.58	3.15	4.37	6.05
Western (c) 129 companies	2.46	3.06	3.97	5.16
" 129 municipals	2.26	2.90	3.98	5.24
Pacific Coast (d) 20 companies	1.66	2.13	2.95	4.16
" 20 municipals	1.61	1.99	2.50	3.22
Total U S A, 290 companies	2.31	2.88	3.80	4.96
" 290 municipals	2.10	2.66	3.66	4.90

(a) Northeastern region comprises area north of the Ohio and Potomac Rivers and east of the Mississippi.
(b) Southeastern region is south of above.
(c) Western region comprises area between the Mississippi River and Pacific Coast.
(d) California, Oregon and Washington.

TABLE 2—MEDIANS OF NET MONTHLY BILLS FOR RESIDENTIAL SERVICE, 1934

Sections	30 kwhr	40 kwhr	60 kwhr	90 kwhr
Northeastern, 102 companies	$2.25	$2.75	$3.65	$4.65
" 102 municipals	1.75	2.25	3.05	4.25
Southeastern, 39 companies	2.55	3.05	4.05	5.25
" 39 municipals	2.45	3.15	4.25	5.25
Western, 129 companies	2.45	3.05	4.05	5.25
" 129 municipals	2.15	2.85	3.75	5.05
Pacific Coast, 20 companies	1.65	2.15	3.05	4.25
" 20 municipals	1.55	2.05	2.55	3.25
Total U S A, 290 companies	2.34	2.89	3.77	4.86
" 290 municipals	2.02	2.58	3.59	4.68

TABLE 3—NET MONTHLY BILLS AND AVERAGE PRICES FOR RESIDENTIAL SERVICE—290 MUNICIPAL PLANTS COMPARED WITH 290 PLACES SERVED BY PRIVATE COMPANIES—1934

I—Arithmetic Averages as Reported

	Net Monthly Bills				Average per Kwhr			
Use per Month	30 kwhr	40 kwhr	60 kwhr	90 kwhr	30 kwhr	40 kwhr	60 kwhr	90 kwhr
Municipals	$2.10	$2.66	$3.66	$4.90	7.00¢	6.65¢	6.09¢	5.44¢
Companies	2.31	2.88	3.80	4.96	7.70	7.19	6.33	5.51
II—On a Tax-Exempt Basis								
Municipals	$2.08	$2.63	$3.62	$4.85	6.93	6.58	6.03	5.39
Companies	2.01	2.51	3.31	4.32	6.70	6.27	5.52	4.80
Municipals are higher than Companies					3.4%	5.0%	9.2%	12.3%

TABLE 4—INCREMENTAL COST PER KWHR

	290 Municipals	290 Companies	488 Places in EEI Rate Book
Between 0 and 30 kwhrs per month	7.00¢	7.70¢	7.28¢
Between 30 and 40 kwhrs	5.60¢	5.70¢	5.45¢
Between 40 and 60 kwhrs	5.00¢	4.60¢	4.615¢
Between 60 and 90 kwhrs	4.13¢	3.87¢	3.82¢

Arthur W. Faires

LaFayette G. Nelson

Mortimer G. Williams

Gerald Roberts

Twelve Recent Awards of Edison Electric Institute Medal

TWELVE Edison Electric Institute Medals for Resuscitation by the Prone Pressure Method have been awarded to employees of member companies of the Institute since the first five awards were made at Atlantic City at the second annual convention last June. Of the twelve medals, three were awarded in Massachusetts and three in Pennsylvania. In addition several Medals are now being struck for other employees who have accomplished resuscitations, and these will be awarded shortly. Several other applications for the Medal are also now being considered by the Judges, of whom Mr E. W. Gorry, of The United Electric Light and Power Company, is Chairman.

The Edison Electric Institute Medal was established by the Board of Trustees of the Institute during the year 1933 as an award to employees of member companies who have successfully resuscitated individuals suffering from electric shock by the Schafer Prone Pressure Method. The award is intended to serve both as recognition of the performance of the act and to encourage and maintain interest in the training of employees in the use of the Schafer Prone Pressure Method of Resuscitation. The award was made available for successful resuscitation cases occurring on or after January 12, 1933, the date of the organization of the Institute.

A certificate describing the service rendered and signed by the President of the Institute is awarded with each Medal. In cases where a Medal has been awarded, a certificate of assistance is available to those who have rendered valuable aid in the resuscitation.

In addition to their significance as well-merited tokens of humanitarian accomplishment, the Medals have a historical and sentimental value in that they have in their composition copper from the original mains laid down in New York City by the late Thomas A. Edison. This copper was part of the first underground distribution system in the world for supplying current for electric light and power.

The names of the recipients of the Medals and brief statements of the circumstances leading to the Awards follow.

ARTHUR FAIRES
Pennsylvania

On March 20, 1934, at 7.40 P.M., Matthew Stribaugh, an employee of the Pennsylvania Power and Light Company at Allentown, Penna., in some unknown manner came in contact with energized 11,000 volt equipment which was mounted 7'6" above the floor of the switchroom in the River Substation. Arthur W. Faires, who is employed as a foreman by the company, was parking his car in the substation yard when he was attracted by an electric flash in the substation. He hurried into the substation and saw Stribaugh lying on the floor, apparently unconscious. He immediately started artificial respiration and after about eight minutes Stribaugh resumed breathing. Faires then notified the Bennett Steam Electric Station of the accident, requesting that an operator be sent to the substation at once. He then placed Stribaugh in his automobile and drove him to the Wilkes-Barre General Hospital.

The Edison Electric Institute Medal was presented to Mr. Faires on Oct. 23, 1934, at 7.30 P.M., at a party held at Wilkes-Barre, Pa., and at which about two hundred employees and their friends were present. Mr. E. A. Wakeman, division manager, Wilkes-Barre, was the presiding chairman of the meeting. The presentation of the medal and the address were made by Mr. N. G. Reinicker, general manager, Pennsylvania Power & Light Company. Local papers published full details of the presentation ceremonies.

LAFAYETTE G. NELSON
Minnesota

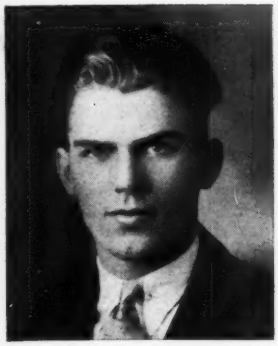
At Elk River, Minnesota, at 11.00 A.M. Sept. 6, 1933, Alfred Brown, Jr., an employee of the Elk River Power and Light Company, was installing ground rods and ground wires for lightning arresters, when he leaned a ground rod against a live phase of 33,000 volt circuit which rendered him unconscious. In falling his body was cleared from contact.

Henry Olson, a fellow employee who was working with Brown, notified LaFayette G. Nelson, manager of the company, of the accident by telephone, and he arrived at the scene in about five minutes, whereupon he started resuscitation at once. Brown started breathing in about twenty minutes, and was later removed to a local hospital for further treatment.

Mr. Nelson was presented the Edison Electric Institute Medal at the luncheon held in his honor on Oct. 26, 1934, at the Midday Club, Chicago, Illinois. The presentation was made by Mr. William A. Baehr, president of North Continent Utilities Corporation, in the presence of various officials of that company. At the same time, Mr. Nelson was given a trip to the Century of Progress Exposition.

JOHN J. CHRISTOPHER
Massachusetts

On May 3, 1933, at 2:17 P.M., Arthur G. Mayo, a line foreman of the New England Power Engineering & Service Corp., was engaged in the adjustment of potential transformer fuses on a structure above some oil circuit breakers. His body came in contact with a live conductor, rendering him unconscious. His body fell across the oil circuit breakers which had meanwhile opened. His body was lowered to the ground by a



H. W. Slagle

Harry A. Glover

Edward O'Mara

Howard S. Leech

fellow workman, and John J. Christopher, an electrician of the company, started artificial respiration at once. He continued for about 20 minutes when Mayo resumed breathing. Mayo was then removed to a hospital for further treatment.

Mr. Christopher was presented with the Edison Electric Institute Medal and Certificate by Construction Manager George S. Hewins, at a meeting of the General Safety Committee of the New England Power Association, held at Millbury, Mass., Nov. 8, 1934. Charles Malaguti, who rendered exceptional assistance in the resuscitation, has been awarded a Certificate of Assistance by the Institute.

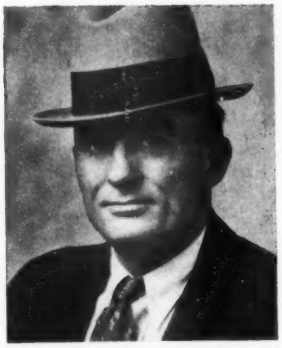
MORTIMER G. WILLIAMS
Massachusetts

On June 10, 1933, at 3:15 A.M., Harold Chase and Mortimer Williams, employees of the Marlborough Electric Company, Marlborough, Mass., were making temporary repairs to a broken overhead wire during the early morning darkness. Using rubber gloves the men stood on the ground while making the repairs. Chase had his left arm over the wire, and movement of the wire caused it to come in contact with his armpit, rendering him unconscious. Williams cut the wire, allowing Chase to fall to the ground. He then started resuscitation, calling for help at the same time. A nearby resident, who was aroused by the call, notified the police, who arrived at the scene about 30 minutes later. The police officers continued resuscitation at this time and after a few minutes the victim started breathing. He was then removed to a local hospital for further treatment.

The Edison Medal was presented to Mr. Williams by Mr. T. J. Hickey, manager of the Marlborough Company, at a meeting of the General Safety Committee of the New England Power Association, held at Millbury, Mass., on Nov. 8th.

NAHEN JABBOUR
Massachusetts

Donald M. Weston, an employee of the Fall River Electric Light Company, Fall River, Mass., was erecting a gin pole on March 31, 1934, at 8:25 A.M., which was to be used in lifting reactors onto an elevated steel platform. He fastened a guy to this structure, then losing his balance he



Leslie C. Shelton

brushed against a live reactor. His body fell clear of the live circuit and was lowered to the ground by other workmen. Nahen Jabbour, maintenance foreman of the company, then started resuscitation, and the victim resumed breathing in about fifteen minutes. Weston was then removed to a local hospital for further treatment, but died about 22 hours later.

The Edison Medal was presented to Mr. Jabbour by Mr. John W. Keeney, superintendent of production, Fall River Electric Light Co., on Nov. 8th, at a meeting of the General Safety Committee, New England Power Association, held at Millbury, Mass.

LINE GANG, TIDE WATER POWER COMPANY
North Carolina

On May 7, 1934, at 9:15 A.M., the line gang of the New Bern (N. C.) Division of the Tide Water Power Company was engaged in the installation of a ground wire on a wooden pole. D. G. Holton, a lineman, was at work at top of the pole when his head came in contact with a live wire, causing him to become unconscious. His body slid down the pole in slow jerks until it reached the ground, where he appeared to be dead. Fellow members of his line gang carried him across a ditch to a spot suitable for resuscitation, which was immediately started. In about 15 minutes Holton resumed breathing. He was then placed in the line gang's truck and removed to a local hospital for further treatment. Members of the line gang who took part in the resuscitation were Caleb B. Bartling, Thomas Hailey, Duncan Davis, A. L. Brown, and J. W. Quick.

The presentation of the Medal was made to the line gang by Mr. Raymond Hunt,

Line gang of Tide Water Power Company

Left to Right—C. L. Carter, Division Manager of the Company. The Line Gang: C. B. Bartling, line foreman, J. W. Quick and L. N. Brown, linemen, Duncan Davis and Thomas Hailey, helpers.

general superintendent of the Railway and Electric Departments, on Wednesday, Oct. 10, 1934, at a division meeting of the employees, held at New Bern. Publicity on the presentation was given in local papers.

GERALD ROBERTS
Vermont

At 11:05 A.M., on July 28, 1933, Charles Woodward, member of the line crew of the Green Mountain Power Corporation, was engaged in the diversion of overhead wires. He was working in a tree in such a position that one of his feet rested on a step ladder and the other over a tree limb. His foot slipped off the ladder and his body fell against a wire upon which he was working, rendering him unconscious, and leaving him suspended from the tree limb by his safety belt.

Gerald Roberts, a fellow employee, who was working in the same tree, unfastened Woodward's safety belt and lowered him to the ground with a rope. He immediately started artificial respiration. After about 20 minutes Woodward breathed without assistance and was later treated by a physician at the scene.

The presentation of the Medal was made by Mr. R. N. Hill, vice-president of the Green Mountain Power Corporation, at a banquet held at Mills River, Vermont, Nov. 20, 1934. Local newspapers carried extensive reports of the presentation.

H. W. SLAGLE
Pennsylvania

On June 28, 1933, at 9:45 A.M., while at work in the Silver Street Substation of the Pennsylvania Power Company at Sharon, Penna., Halsey M. Allard, an employee, attempted to clean an energized oil circuit breaker in preparation for painting. He fell clear of the circuit to the ground and H. W. Slagle, substation electrician, who was working nearby, was attracted by the noise and the arc. He saw that Allard had come in contact with the live oil circuit breaker and he immediately applied the prone pressure method of resuscitation. After about five minutes Allard was breathing normally and was removed to the hospital. He died the following day as the result of burns received at the time of the accident.

Mr. Slagle was presented the Edison Electric Institute Medal by Mr. Rufus Moses, manager of the Sharon Division, at a bimonthly safety meeting of line, substation and meter department employees of the company. Thomas Clyde, who assisted Mr. Slagle in the resuscitation, received a Certificate of Assistance.

The Sharon *News Telegraph*, Sharon *Herald*, New Castle *News*, and the Pittsburgh *Post-Gazette*, published full details of the accident and of the award and presentation.

HARRY A. GLOVER
Pennsylvania

W. O. Lester, a lineman employed by the Duquesne Light Company of Pittsburgh, Penna., on Aug. 17, 1934, at 1:30 P.M., was in charge of a line gang engaged in testing a transformer which was apparently struck by lightning. The test involved high tension connections from an overhead line to a portable potential transformer located on the ground, from which voltage readings were to be taken. Through a misunderstanding of signals, the lineman on the pole made the circuit to the potential transformer alive before Lester was clear, causing him to lose consciousness. Harry A. Glover, an apprentice engineer with the Duquesne Light Company, who was assigned to the test, applied resuscitation immediately, reviving Mr. Lester in about five minutes. Lester was treated by a local doctor and sent home.

The Medal, and also a cash award of the Duquesne Light Company, was presented on Dec. 19, 1934, to Mr. Glover by Mr. E. W. Judy, vice-president and general manager, Duquesne Light Company, in the presence of a group of interested officials of the company.

EDWARD O'MARA
Pennsylvania

John Hamm, a lineman in the employ of the Philadelphia Electric Company, Philadelphia, on August 10, 1934, at 9:45 A.M., was working on a pole making changes in connections. He came in contact with a live wire and lost consciousness, remaining suspended by his safety belt. He was lowered to the ground by fellow employees. Edward O'Mara, a cable splicer, who was working in the basement of a nearby building, responded to calls for help, and immediately started resuscitation. He continued for about five minutes when Hamm breathed without assistance, and was removed to a local hospital for further treatment.

Presentation of the Medal to Mr. O'Mara was made in the Broadwood Hotel, Philadelphia, before nearly 2000 employees of the Philadelphia Electric Company. The Medal was presented by Mr. A. M. Boyd, manager of the Personnel and Safety Department. Philadelphia newspapers carried accounts of the presentation ceremony.

HOWARD S. LEECH
Virginia

On July 21, 1934, at 3:30 P.M., Forrest O'Connor, a line foreman of the Virginia Public Service Company at Clifton Forge, Va., was working with another lineman on repairs to a broken overhead wire. The location was on a hillside, after a heavy rainfall. O'Connor slipped on the wet grass, falling against the live wire under repairs, rendering him unconscious.

Howard S. Leech, an assistant manager who supervised the repair work, removed the victim from the circuit, and started resuscitation immediately. In about twelve minutes O'Connor began breathing without assistance. He was then removed to a local hospital for further treatment.

The Institute Medal was presented to Mr. Leech by Mr. Lewis Payne, vice-president and general manager of the company, on Jan. 12, 1935, at a meeting of employees and representative citizens of Lexington and Clifton Forge, Virginia. The presentation ceremonies were reported in the local papers.

LESLIE G. SHELTON
Texas

On May 22, 1934, at 10 A.M., employees of the City of Fort Worth, and the Texas Electric Service Company were working jointly on the repairs of a city-owned series street lighting circuit.

The work consisted essentially of pulling an overhead wire into place. G. Marvin Wood, a lineman employed by the City of Fort Worth, was standing on the ground, pulling the new wire into place. In some manner, this wire came in contact with an adjacent live overhead wire, rendering Wood unconscious. Linemen on two adjacent poles cut the charged wire clear of contact.

Leslie G. Shelton, a lineman of the Texas Electric Service Company, immediately started resuscitation, and Wood regained consciousness in about five minutes. He was removed to a local hospital for further treatment.

The Medal was presented on Dec. 24, 1934, to Mr. Shelton by Mr. A. J. Duncan, president of the company, in the presence of Mr. Shelton's foreman and members of the executive staff of the company.

Advance Notice on The Hughes Award

THE following announcement is from Mr. Frank W. Smith, chairman of the Prize Awards Committee:

"It is gratifying to receive notice from Mr. George A. Hughes, president, Edison General Electric Appliance Company, that he wishes to continue the Hughes Award through another year. The contest year for the 1934 competition does not end until Feb. 28, 1935, but on behalf of the Prize Awards Committee I am making early announcement of the generous action of Mr. Hughes in order that early plans may be made for sales achievement in electric cooking during 1935. I suggest that appreciation of Mr. Hughes' interest can best be expressed through wide participation in the competition."

Details of the Terms and Conditions of the award follow:

THE George A. Hughes Award of a Cup and One Thousand Dollars is offered through the Edison Electric Institute, to the operating utility company and individuals in the company whose work and cooperative efforts show the greatest contribution to the development of the domestic electric cooking load, through promotion, or selling, or both, during the calendar year 1935. This prize award is in honor of George A. Hughes, President of the Edison General Electric Appliance Company, Inc.

The Purpose—To stimulate interest in Electric Range sales and for advanc-

(*Continued on page* 62)

Safety In Transportation

By C. N. Rakestraw
The Cleveland Electric Illuminating Company

Second of a Series of Articles Sponsored by the Accident Prevention Committee, Edison Electric Institute, W. A. Buchanan, Chairman

WITH the curve of traffic fatalities in the United States turning sharply upward in 1934, and with the property damage due to crashing automobiles mounting higher than ever before, it is small wonder that this feature of our modern life has engaged the attention of all who have to do with industrial or public safety. Although all the annual figures are not yet available, those at hand at the close of the year indicated that only four states might have a better traffic record in 1934 than in the preceding year.

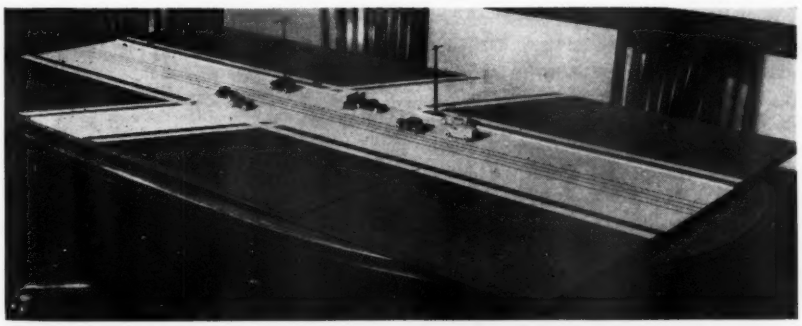
That accidents *can* be prevented is no longer a debatable question, as is proven by the experience of industry in general and of our own member companies in particular. And it is just as true that accidents to automobiles can be prevented, if the same care and energy are put into the work of prevention as has been done in the case of personal accidents. This is well illustrated by the case of the Department Store fleets of trucks in one city, where a concerted effort over a period of six years reduced the chargeable accidents from one accident per 5000 truck miles to one accident per 75,000 miles.

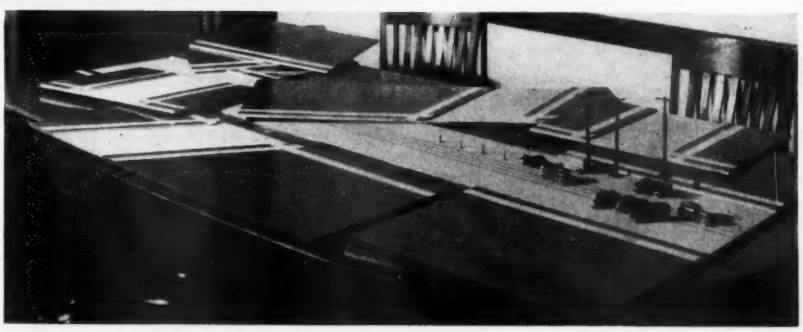
It is obvious that there must be some differences of technique, so to speak, in the solution of this problem. The drivers of our motor vehicles, whether trucks or passenger cars, are away from the direct supervision of their superiors while in the active performance of their work. It is not possible for their supervisors to watch over the employees' surroundings and to see that the physical set-up is kept safe for him. His safety and that of his vehicle is largely dependent on his own initiative and watchfulness. His safety consciousness must be ingrained, not laid on.

In order to provide an agency for the collection and dissemination of data as to the best practice in attacking this problem, the Accident Prevention Committee of the Edison Electric Institute has set up the subject of Traffic Hazards as one of those to be handled by a sub-committee. And in order to make a beginning in that work, this sub-committee asked one question of a number of our member utility companies. These companies were picked from among the cities, of different sizes, which had a much better traffic record than the average. The question was this: "What one thing, if you can pin it down to one thing, have you found most successful in reducing your traffic accidents?" As might have been expected, there were few of the correspondents who could, or would, give the credit to one panacea. But out of the various comments given, there were some principles which stood out plainly.

As one company put it, "The real answer to the question is the elimination of the unfit; if the incompetent or unsafe driver could be eliminated at the time of employment the problem would be greatly simplified. But the eliminating process must be continuous in order to detect those not determined at the time of employment or those whose status has altered through physical or mental changes." In other words, once the man has been put on the pay roll, we come back to Accident Prevention's old fundamental, SUPERVISION.

"The trouble is," says another, "that one of the difficulties found in the public utility field is the fact that drivers of motor vehicles are not hired as drivers and neither are they supervised as such. As a general rule, driving is an incidental part of the job. A man is not hired because of his driving ability, but rather because of sales





As a means of carrying out its investigations of traffic accidents, one company has constructed a Model Board, upon which may be reconstructed the conditions met with in the accident, and the sequence of actions involved

ability, engineering ability, collecting ability, etc. If he proves to be a desirable employee from that standpoint, supervision is loath to part with his services simply because he is an incompetent or reckless driver, and usually they are willing to forgive these shortcomings, if he is able to perform satisfactorily on his job." He evidently agrees with the one first mentioned, that the process of elimination of the unfit driver ought to be a continuous one. And he proves his point, for he goes on—"As far as our company is concerned, we made little progress in the control of vehicular accidents until we were able to measure the performance of the driver and have it considered as one of the important elements of the job. When management became interested to the point that they were willing to apply disciplinary measures, where performance was measured, and accident-prone drivers isolated and treated accordingly, we made progress." And a third company places first in its lists of requisites "A sincere attitude on the part of the management," thus emphasizing the quotation above.

It was worthy of note that all the correspondents who quoted from their experience stressed the need of rigid supervision in the carrying out of the work. Many of them, of course, mentioned the importance of careful inspection of the motor vehicles, and of effectively directing the attention of all drivers to the necessity of seeing that all equipment is in good condition by reporting the need for repairs.

But several companies, in fact nearly all of those contributing their experience, bear heavily on the importance of the investigation of all traffic accidents which have occurred. Says one, "I believe I may safely say that our success is due entirely to proper supervision of our drivers, the proper inspection of equipment, and thorough investigation of accidents when they do occur. If the driver or employee is grossly negligent in the cause of the accident, a proper warning is given him through his immediate superior. If the accident is caused by defects in the equipment, the investigation centers on ascertaining what caused the equipment to fail and whether previous report of any defect had been made and, if so, why necessary repair had not been made. Incidentally, when our employees found out that rigid investigations were being made as to the contributing causes of each and every accident, it became evident that more care in driving as well as in the pursuit of their other duties was being exercised." Another large company says, "We believe that the investigation of accidents and placing of responsibility for the accidents, and imposing of penalties where negligence in any degree is established has done more to reduce our accidents than any other activity."

Another utility gives credit for its reduction in traffic accidents to two things. One is a rather unusual requirement that an employee pay part of the damage if he was negligent in bringing about the accident. The other feature is "That the field offices actually place the responsibility on some one and set out the cause on the accident report." The same thought is set out by another member in saying—"A constant study of all accidents and near accidents, with a definite finding in each case." And that same company mentions another important point, in summing up, "And they require constant, consistent, and not sporadic attention." One of the companies believes that an individual employee accident record should never show more than three accidents of any kind occurring within one year, and the intimation is there that action is taken to see that he has no opportunity to have a fourth one.

One of the companies classifies each traffic accident into one of four classes: *A*—where car was parked without driver in the car; *B*—where car is in motion but driver not at fault; *C*—in which the driver is partly to blame; *D*—where the driver is entirely at fault. An Automobile Accident Board determines this classification, and determines all the facts about each accident saying, if possible, just what should have been done to prevent it. This board includes the Safety Engineer, the Garage Superintendent, a Claim Department representative, their Insurance Company representative, and the Department Head involved.

As a means of carrying out its investigations of traffic accidents, one company has constructed a Model Board, upon which may be reconstructed the conditions met with in the accident, and the sequence of actions involved. This model has one street running lengthwise, and a central portion which can be changed by various inserts to show a cross street at right angle or oblique, or two right angle streets with an offset between, or one street leading either way at any of these angles. Or the street can be shown straight, without intersections. Sidewalks and tree-lawns are shown, and street car tracks in the main street. The board is made of pressed-wood, and painted a light cement-gray as to streets and walks, and green for the lawns. Small automobiles and trucks were bought from the ten-cent store. Several poles with metal bases were made, so they can be put in place where needed, and even a little fire hydrant was made for cars to climb. A small street car was also found in a toy store, to fit the same scale, which was five feet to the inch, throughout. One of the photographs shown with this article shows the board set up for an explanation of an accident. From the other picture an idea may be gotten of the board's construction. The driver involved in an accident is called into the office, and there made to set up the cars on the board to show just the conditions. He is asked to move each car in the way it was concerned in the actual occurrence, and then told to reconstruct it again, doing things as they *should* have been done.

In its handling of the traffic accident problem, one company emphasizes to its drivers one thing which is mentioned too infrequently—the fact that, in nearly all cases, minor accidents on the highway are minor just because the circumstances which existed at the time were fortunate and favorable rather than otherwise. We are perhaps all of us too prone to pass over lightly the scratched fender or the slightly bent bumper. Just as in the case of our general accident prevention practice it is often only a matter of two or three inches between a death and a slight scratch when a bolt falls from a pole—so it is only a difference of a fraction of a second between a grazed fender and a terrific crash, where two cars are concerned. The tendency all along the line, among those companies having the best records, is to tighten up on the supervision of their driving personnel.

Contests and the competitive spirit are all very well, but the real person every employee wants to please is his BOSS. If every man who drives one of our motor vehicles knows that his Boss—and beyond him, the Management—is closely watching his individual record, the problem of safety in our motor transportation is well on the way to solution.

Byllesby Prize Paper

How to Increase the Usefulness of the Accountant in the Public Utility Industry

By Arthur J. Murphy

BIG business and the rapid development of the corporation may be considered as being responsible for the accountant. As long as business remained in the primitive barter stage there was no need of keeping a record of the trading that was done, but as soon as the element of credit was introduced, some record of the amounts due from customers became necessary. The old day-book was introduced and then the ledger, and, as business grew, the value of these records was seen. As this recording of transactions began to require considerable time, the proprietor found it necessary to assign this work to one individual, later known as the bookkeeper. With the development of business came the need for more and better records and today we are engrossed in vast volumes of cash books, journals, ledgers, income and expense statements and balance sheets.

Out of this development came the very highly skilled record keeper or, as we know him today, the accountant. There is, however, a vast difference between the bookkeeper and the accountant. The accountant may be considered as one who is trained in the knowledge of legal, industrial, commercial and financial principles while the bookkeeper is known as one who merely records the transactions in accordance with the principles of accounting. The two are very closely associated, so closely that it would be impossible for a person to be an accountant without knowing the technique of bookkeeping. The accountant may be a bookkeeper, but the bookkeeper cannot be considered an accountant.

No profession has increased or expanded so rapidly in the past twenty years as that of accounting. Although it is said that accounting was legally recognized as a profession in England in the middle of the last century, it was not until 1896 that the legislature of the state of New York passed an act creating the degree of Certified Public Accountant. The change from the private to the corporate form of business, and the enormous growth of manufacturing, transportation, mining, merchandising and financial organizations has demanded a specialist to keep pace with the expansion. One may readily understand the capability of the accountant and his value to any type of industry by keeping in mind the requirements placed upon him.

MR. MURPHY

Mr. Murphy, a graduate of Marquette University, is the winner of the third Byllesby Award for 1934. *He has been employed by the Wisconsin Public Service Corporation since June,* 1928, *originally on construction and consumers' accounting work at Green Bay. From June,* 1929, *until June,* 1932, *he was general storekeeper of the Sheboygan Division. Since that date, he has been assistant to the division auditor at that property.*

Accountants Can Increase Usefulness In The Utility Industry

Although this discourse will deal primarily with the accountant in the utility field, one may rightfully consider that the same principal elements that will increase his usefulness in this field will also increase his usefulness in other fields.

Accounting in the utility industry has a broader usefulness than in other industries. It must set forth financial results of the operations not only to the executives, bankers and investors but also to tax authorities and regulatory commissions. No other industry publishes as many statements or furnishes as many reports of its operations to the public and regulatory bodies as does the utility. As many of these reports and statements fall into the hands of people who are not too friendly toward utilities, care should be exercised in presenting them. Advocates of public ownership are lying in wait for an opportunity to strike, and any loophole that might be left by careless presentation of facts is seized by such advocates, who immediately circulate erroneous propaganda. The alert accountant knows the sentiment of the public fully as well as does the management, and in times such as the present he should guard against releasing information in a manner which might prove detrimental to his company. He is highly skilled in the art of making reports and statements, and can present them in such a way that the facts will be clear to everyone.

Regulatory commissions are today making many rulings, legislatures are passing numerous laws affecting utilities, and while the executives in charge of management are aware of these rulings and laws that are affecting their own business, they seldom delve deeply enough into such things to know just what direct effect they will have. The accountant may assist them materially by studying such measures, by setting up an imaginary picture of the effect they will have on the company, and perhaps even by suggesting a way in which they may prepare for dealing with these laws and rulings long before they become effective.

Court decisions and commission rulings often upset the accounting proce-

dure of utilities, and, if the accountant is on the job, he will be familiar with the probable effect of such orders and be prepared to meet the situation in a manner that will not interrupt the regular routine operations. For example, in June, 1932, the United States government passed a law imposing a tax of 3 per cent of the amount paid for electrical energy for domestic or commercial consumption. The law went into effect fifteen days after its enactment, and it affected nearly every electric utility in the United States. Here was a problem for the management. The utility must collect this tax from the consumer and pay it to the government, but how? How was the utility to show this tax on the service bill? How were they to deal with the customer who claimed an exemption, and how would taxes that were not collected affect their uncollectible accounts? It is safe to say that perhaps 50 per cent of the utilities were utterly unprepared to meet this situation.

The alert accountant, no doubt, had been studying this act, planning the manner in which he would show the tax on the bills, setting up records for the accumulation thereof, and investigating many other angles of the bill even before it became a law. It is in matters of this kind that he can increase his usefulness and demonstrate his true worth.

Opportunities surround the accountant on all sides. To take an actual case of the assistance he may be to the management, let us consider the problem confronting all gas utilities that are producing coal gas. Disposition of the residuals, such as coke, tar, and ammonia, on the most profitable basis has always presented a problem. The location of the utility, of course, has considerable effect on the marketing of these products and will affect the decision as to what plan is adopted. For illustration I will use the product, coke. Many utilities retail their coke at the prevailing prices. This requires a sales department, delivery equipment, additional employees in the accounting department and service men. Other utilities wholesale the coke to one or two dealers, thus eliminating many of these sales expenses. To determine which of these methods is the more profitable requires a detailed study by the accountant. Whether the costs involved by employing these extra departments for retailing will be offset by the difference in price received by wholesaling is a vital matter and considerable responsibility rests on the accountant in furnishing reliable information.

During the past ten years there has been a very rapid rise in the industry. Expansion of property and plant knew no boundaries. Every project had its engineers and among them was the lowly construction accountant. During the early stages of the rise he was looked upon as a necessary evil, someone who was always prying into something in which he had no business. The engineer had no time for him and he found it difficult to progress or advance in his line of work. Millions of dollars were at stake in some of these projects, and executives began to demand more information from the engineer. They wanted to know how the job was progressing, how expenditures to date corresponded with the estimates, how much the indirect costs were, and what they involved. Where was the engineer to get this information? He found that the construction accountant on whom he had frowned not so long since had this information in his records. By cooperating with the accountant and advising him of many of the difficulties and problems he was facing, he found a sympathetic ear and a helping hand. Daily progress reports were furnished the engineer, costs to date and budget balances were compiled for him and he found it much easier to answer to the executives. All of this cooperation, however, was not effected voluntarily by these two departments, as much credit for bringing them together may be attributed to the establishment of uniform classification of costs and uniformity in reports, which required the assistance of both the engineer and the accountant. If the utilities were to start a building program today the management would find an altogether different feeling existing between these two departments and could look forward to the highest degree of cooperation.

From these specific illustrations, let us look to some of the more common matters which the accountant encounters each day. Finance, budget, law, taxation, commission procedures, and office management are all matters of daily routine.

Experiences of the past give the accountant a new "slant" on financing. Because of the nature of his duties he becomes somewhat of an economist, and as financing is affected very materially by economics it behooves him to keep in close touch with the economic world. The smart, well-informed accountant can be of much assistance in offering his suggestions in this matter. We have only to look back to the years of 1928, 1929 and 1930 to see what might have been done in financing. Let me state here the activities of the Duquesne Light Company in 1928. The accounting executives in charge of finance saw an advantage in refinancing. They called $10,000,000 of 7 per cent Preferred Stock and floated a new issue of $20,000,000 of 5 per cent Preferred. A substantial saving in dividends each year. Opportunities for services of this type are frequent in the utility field.

While the duties of budgeting do not fall entirely on his shoulders, the accountant has a vast amount of material that he may furnish the operating departments in forecasting the operations of the industry. Earnings and expenses may be predicted for a year in advance only by considering very carefully the results of the past years' operations. This information he has readily at hand and he can assist materially by providing it for the other departments.

Unless the accountant has a reasonable knowledge of law he will find himself unable to meet many of the everyday problems confronting him. He must also keep in close touch with commission rulings and procedures, as his very success depends upon the manner in which he deals with these matters. The income tax, energy tax, and property tax laws provide many varieties of exemptions and the better knowledge he has of such exemptions the better position he is in to save his corporation large expenditures in taxes.

The accountant stimulates good will by the careful training of his assistants. Elimination of errors in billing, courteous meter readers, bill passers and cashiers are the result of training in the accounting department. The public seldom knows the company except through the contact made with accounting employees.

Accountant Can Increase Usefulness To Management

Management today wants to know *why*. *Why* has the revenue decreased? *Why* have expenses increased? *Why* is there a change in the revenue this month over the same month last year? Hardly does the accountant have the last of his figures compiled at the end of the month until he hears the voice of the management asking, "How much? Why the change over last month? Why the change over last year?" It is the duty of the accountant to know WHY and to account for these conditions to the

(*Continued on page* 64)

Bare Neutral for Interior Wiring

THE public press for the past few years has contained many articles dealing with the cost of the distribution of electrical energy. These articles, however, are concerned with only a part of the distribution system which is necessary for the full enjoyment of electrical energy. For some years utility executives have realized that the bottle neck for the wider enjoyment of electrical energy was on the part of the distribution system beyond that owned by the public utility. In other words, the interior wiring which is installed and owned by the customer has in many cases proved to be a very serious limitation on the full use of electrical energy. This has been particularly true in residential installations.

Realizing the necessity for reducing the cost of interior wiring, a number of various arrangements for breaking away from the conventional systems of wiring with a view to reducing the cost of installation without sacrificing efficiency or safety have been devised. One of the means for accomplishing this has been the use of the bare neutral. This naturally occurs to the utility engineer who has seen the secondary system change from ungrounded to single grounded, to multi-grounded—always with an improvement in safety and reliability.

The bare neutral for interior wiring is by no means a new or unique development. Concentric wiring with the outer sheath as a bare neutral has been in use in Europe for many years. About 1913 a limited amount of this material was imported into the United States and installed in various buildings. Only one of these buildings can now be located and its concentric wiring still is rendering entirely satisfactory service.

The application of bare neutral wiring in rigid conduit or in armored cable does not involve any essentially new features. In this system a bare conductor is substituted for one of the insulated wires and used for the neutral throughout, resulting in saving in space and ease of installation. Likewise, the application of bare neutral wiring to armored cable involves the use in largely the same manner of substantially the same material, the difference being that one wire is bare and in contact with the armor. This results in an appreciably smaller assembly, which is naturally more flexible, lighter in weight and easier to handle.

In addition to the application of bare neutral to the older wiring systems a new system of wiring was developed under the auspices of a special committee of the Association of Edison Illuminating Companies.

The new wiring system has as its chief new element a light-weight small-diameter cable assembly—bare neutral with No. 12 copper. The outside diameter is about one-fourth inch—less than one-half the size of conventional flexible metal armor cables, and about one-third the weight. The bare neutral is stranded, wrapped around the insulated central "live" wire and covered with a light steel tape armor in direct contact with the neutral. Boxes are of bakelite, with a removable metal base to which cables and neutrals are secured. Wiring is done outside the box, then base and device pushed back into place. Box supports are more or less conventional in design. There is a 3-circuit fuse center using a standard design of cartridge fuse to which a small knob handle is added. Two fuse centers are used even in a small job, each fed from the service with a 10/2 cable. Six circuits of ample capacity (No. 12) fed by a No. 10 provide against voltage drop.

Fig. 1 shows a photograph of the relative size of this new AEIC wiring compared to the conventional wiring systems. It is quite obvious from a comparison of the size and flexibility of this cable that the installation would be much simpler and easier throughout. The first installation of this AEIC wiring was made about three years ago and many installations of other forms of bare neutral have been in service for a greater length of time. At the present time bare neutral wiring has been used as follows:

Type	*Approx. No. of Installations*
AEIC Wiring	1,000
Rigid Conduit or Thin Wall Conduit	500
Range Cables	6,000
Service Entrance Cables	40,000

In view of the large number of installations which have been made of bare neutral over the last several years it was felt desirable to obtain actual information on the performance characteristics of these systems. Several reports have been circulated to the effect that certain objectionable conditions were being experienced. In view of this the Edison Electric Institute arranged with the Underwriters Laboratories to make a thorough field investigation for a fact-finding determination of the conditions existing and the performance which the bare-neutral wiring installations are rendering.

In making this investigation the engineer of the Underwriters Laboratories

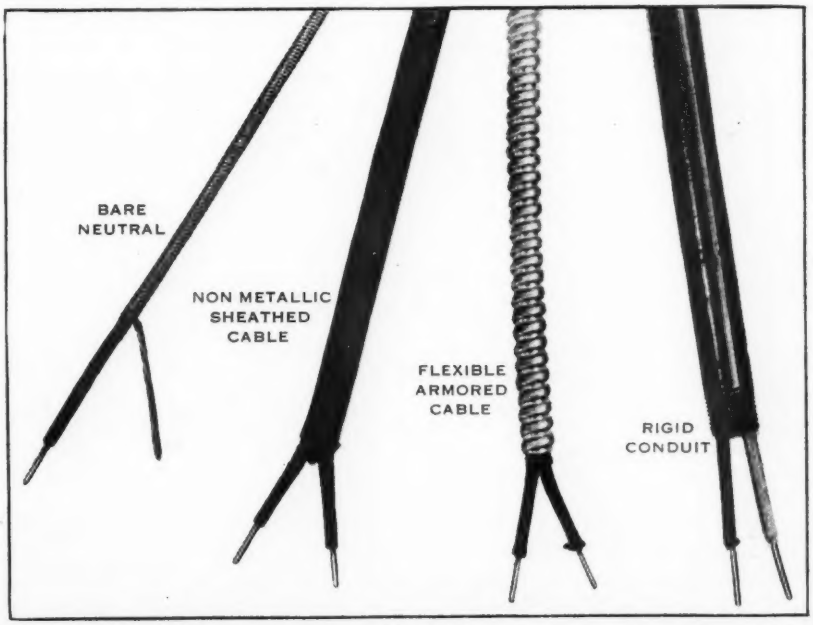


Fig. 1—Relative size of "bare neutral" cable assembly compared to other wiring systems

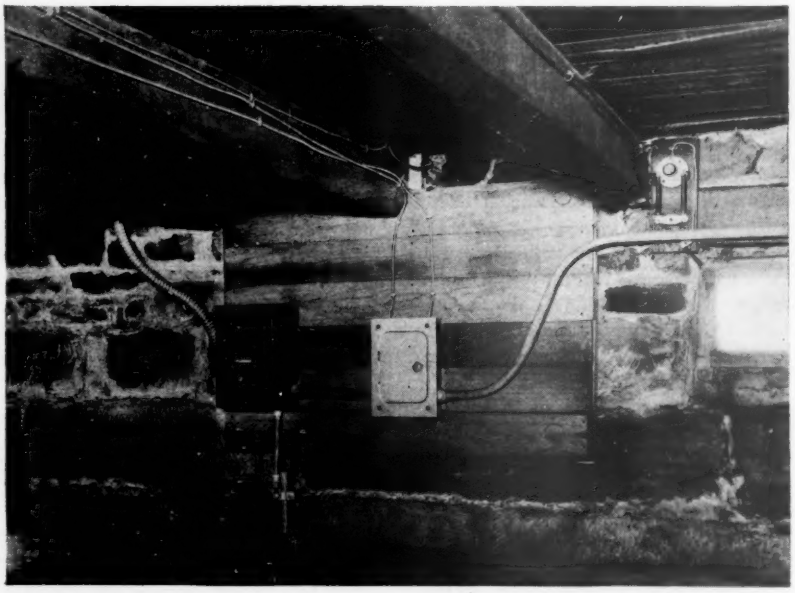


Fig. 2—Service Board in Old House, driven ground. Two AEIC Feed Cables No. 10 A.W.G.

visited a large number of bare-neutral installations located in and around Detroit, Cleveland, Buffalo, Hartford, Boston, Baltimore, Pittsburgh, Canton, Coshocton, Zanesville, Charleston, W Va, Cabin Creek, W Va, Bluefield, W Va, Ashland, Ky, Tazewell, W Va, Bluefield, Va, Kingsport, Tenn, Louisville, Ky, Evansville, Ind, and South Bend, Ind.

Following this investigation a report was prepared by the Underwriters Laboratories. This report has been sent by the E.E.I. to all members of the Electrical Committee for their consideration. The following is the General Summary drawn by the Underwriters Laboratories as a result of this investigation:

General Summary of Report on Bare Neutral Wiring

1. The investigation was not planned to cover details of installation methods nor the design and construction features of the materials used.

2. In the execution of the AEIC cable projects the thorough cooperation generally established between the wiring contractors and the utility sponsors resulted in having houses wired in a complete manner, with adequate outlets and with a supervision of details assuring satisfactory service. According to the degree that such engineering attention was exercised, the quality and adequacy of installations were found to vary. The AEIC cable installations that are in service generally present a relatively high grade of construction.

3. The use of tinned conductors has been specially recommended for use with bare-neutral wiring.

4. A substantial percentage of existing wiring in service in buildings has numerous grounds on the grounded conductor, thus presenting conditions inherently the same as with bare-neutral wiring. A fundamental characteristic of bare-neutral wiring is the impossibility of operation with a reversal of polarity of the conductors.

5. Bare-neutral wiring is no longer an experiment but on the contrary is an established practice as evidenced by its widespread use and diversified application in the face of opposition and lack of recognition by inspection authorities.

6. The bare-neutral method of wiring inherently presents the probability of a multiple or by-path return for the current of the neutral conductor. The extent of such current diversion from the neutral conductor was found to be influenced by the degree or completeness with which bonding was made between cables, conduits and other interior piping and metal members. The opinions as to bonding were found to be about equally balanced as to whether to bond wherever possible, or whether to attempt to segregate and isolate bare-neutral circuits. The only examples of segregation were with AEIC cable installations.

7. The existence of by-path currents as noted in this report was not found to have any effect respecting service, corrosion arcing or heating or to have any effect respecting the fire and accident hazards of the wiring installations.

8. Inspection representatives interviewed expressed a willingness to permit bare-neutral wiring when and as established as a standard. In brief, their attitude and interest are academic.

9. Statements and rumors respecting corrosion with bare-neutral wiring have been investigated at first hand without finding any such alleged corrosion.

10. No complaint or criticism of bare-neutral wiring as a method has been presented by those most familiar or experienced with its application and use.

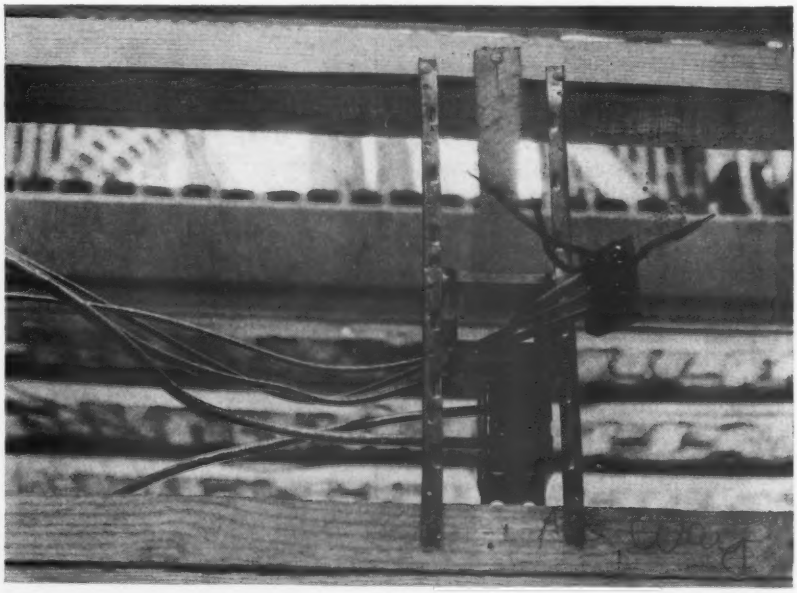


Fig. 3—Switch installations with AEIC cables and Bakelite Boxes

Better Light-Better Sight Bureau Turns First Milestone at Full Speed

Optical Men, Electrical and Allied Interests Hold Meeting—Gratifying Results of First Year Lend New Impetus to Future Activities

By Glen R. Trumbull
Manager, Better Light-Better Sight Bureau

ROLLING along the trail to a better lighted, and hence a better seeing America, the National Better Light-Better Sight Bureau has passed the first milestone in its short history with flying colors, exhibiting a momentum that promises greater things in the future.

At least that was the impression which some 200 electrical, optical and paint men and women and others of allied industries carried away from the first conclave of the bureau, held in the auditorium of the Electrical Association of New York at the Grand Central Palace, Jan. 29, 1935. An all-day program of addresses by important men, representing the United States Health Service, an insurance company, a parents' magazine, the Better Vision Institute, and various divisions of the electrical and paint industries, left little doubt that the National Better Light-Better Sight Bureau is permitting no obstacle to interfere with its gigantic task of informing the general public of the advantages and necessity of eyesight conservation.

Chairman Skinner Reports

The purpose of the meeting was stated by Chairman M. E. Skinner as three-fold: "First, that we may report upon the phenomenal progress of this cooperative movement to date; second, that we may learn of interesting new developments and gain some idea of the future possibilities; and, finally, that we may carry away renewed enthusiasm by listening to a series of addresses and presentations by individuals who have made real contributions to our project."

Mr. Skinner gave a progress report which was substantially the same as that which appeared in the January issue of the E. E. I. BULLETIN under the heading—A First of the Year View of the Better Light-Better Sight Program.

"Better light has its principal justification as a means of better sight," Mr. Skinner continued. "Likewise, the correction of refractive errors by means of proper glasses is solely for better sight. There are many other things which can contribute to better sight than the products and services represented by those interested in the bureau.

"Medical men who naturally view eyesight conservation from the point of view of the diseases of the eye and who understand the ability of medical science to control diseases which prey on the eye will, naturally, ridicule eyesight conservation programs which are built exclusively on the theory that better lighting will *save* eyes.

"These professional groups do not deny that lighting can contribute greatly to better seeing and they are in every instance anxious to help our program, asking only that our story deal with facts and that *undue* importance shall

not be attached to any particular phase of eyesight conservation.

"In some localities the influence of the Better Light-Better Sight movement has stimulated the organization of groups interested in eyesight conservation solely from the social betterment or humanitarian point of view. This development was not anticipated and some confusion has arisen between the purely social objectives of such groups and the more commercial aspects of the subject which have been emphasized by our bureau. However, the interest has been such as to carry the movement through early difficulties and establish it on a firm foundation. The Sight Saving Council of Cleveland is the outstanding example of this phase of the activity.

"For those interested in a comprehensive program of eyesight conservation, I recommend the outline prepared at our request by the National Society for the Prevention of Blindness.

". . . Research does not stand still. Already, the study of some of the hitherto unexplored phases of seeing is producing new and startling information. For example, it has been found that the heart action changes as we read under various lighting conditions. Just why, or what is the significance of this condition, we do not know as yet. We will have to go to the medical profession for the answer to such questions. This is only one illustration of the fund of new knowledge steadily being made available. The production of such research data has been vastly stimulated by the interest already aroused in the movement.

Only the Beginning

". . . Frequently I am asked the question, 'What are we going to do next year? Haven't we already covered the ground pretty thoroughly?' In the words of Captain Henry of Showboat fame, what we have accomplished to date 'is *only* the beginning.' We have embarked on a job which calls for the education of every man, woman, and child in the country in the principles and practices of better sight. Such a task is never done and to date we have only made a good start. During the past fall the lighting schools conducted by the lamp manufacturing companies and utilities have made substantial progress in educating our own personnel but the subject is too big to expect that one three-day school will impart more than a rough outline of the subject. All these educational activities will have to be continued and expanded so that we can instruct the field forces of all the cooperating groups if we expect to develop sufficient man power to carry our message to the public at large.

"We cannot stop until the essential information on the relation between light and sight is clearly recognized as part of the necessary training every young person should have."

Jay Walkers' Injuries Greatest

"Pedestrians are the greatest sufferers from automobile accidents, according to a survey of 60 American cities which revealed that jay-walker fatalities comprise 69 per cent of the total," said R. E. Simpson, illuminating engineer of the National Bureau of Casualty and Surety Underwriters.

Insufficient illumination on the streets was cited as the chief cause of automobile accidents by Mr. Simpson, who says that the lack of light is, "in effect the same as partially blindfolding all the users of the streets and highways."

Although 75 per cent of automobile traffic is in the daytime, seven times as many accidents occur at night.

"The night fatality rate," continued Mr. Simpson, "varies inversely as the grade of street light. That is, as the level of street lighting goes down the night fatality rate goes up.

"Heavy traffic thoroughfares which comply with the minimum requirements of the Street Lighting Code of the Illuminating Engineering Society have a night fatality rate per million vehicular miles seven times higher than the day rate on the same thoroughfares.

"Wherever the lighting on the thoroughfares fails to meet the Illuminating Engineering Society Code, the night fatality rate is 10 to 15 times higher than day rate.

"An investigation of 20 miles of super-lighted street averaging 680 lumens per linear foot, and a similar stretch of ordinary lighted streets averaging 147 lumens per linear foot yielded the following results. The cost of lighting the super-lighted streets for the year 1933 was approximately $600,000 as against a cost of $220,000 for the ordinary lighted streets. A saving of $380,000. The night accident history was 20 fatalities, 520 other accidents or a total of 540 on the super-lighted streets and 67 fatalities, 1742 other accidents or a total of 1809 on the ordinary lighted streets. That is, there were 1269 more night accidents including 47 fatalities on the ordinary lighted streets than on the super-lighted streets. This means that for every $8000 saved on ordinary lighted streets a human life was sacrificed. Municipal authorities might well pause and ponder whether in determining their street lighting policy they can afford to save in dollars and pay in deaths at so much per death."

Seeing Speed Varies with Vision

Visual acuity for the speed at which the human eye sees varies according to age, according to James E. Ives, senior physicist of the U. S. Public Health Service.

"Visual acuity increases on an average from 6 years of age to about 18 years and then decreases rather rapidly to about 43 years of age, and then more rapidly to about 55 years of age.

"There is a normal variation of age, which is more or less independent of the way in which the eye is used and of the degree of illumination under which work is performed.

"The increase of visual acuity during the early years of life of children is due primarily to the fact that at birth the eye of the child is highly hyperoptic and that this hyperopia diminishes as the child grows older.

"It is seldom that we stop to think how valuable this great gift of eyesight is to us. It is only when something unusual occurs that we awake to its importance. Recently a dear friend of mine has suddenly become blind in one eye through the detachment of the retina from the choroid. We knew that he was a myope, but did not anticipate the catastrophe that has befallen him. Was the myopia produced by too intensive use of his eyes, or by poor illumination, or by both together? Possibly with better care of his eyes and better illumination this unfortunate event might have been avoided. Certainly the problems of good lighting and the protection of the eyes are of mutual interest to us all, as witness the glare of headlights in night driving on country roads; insufficient lighting of roads, especially in the country; and insufficient and improper lighting of our public libraries, schools, workshops, offices and homes. Certainly lighting is a matter of mutual interest. Insufficient or improper lighting in the schoolroom, such as too small or improperly placed windows, improperly placed blackboards, or insufficient artificial illumination, will produce a strain on the eyes of the growing child, and if the child is naturally myopic, will undoubtedly injure his eyes. The clerk and industrial worker also must have proper and sufficient illumination upon his work if his eyes are to be protected.

Illustrations used in this article are from photographs of 8½′ x 4′ displays on exhibit at the Better Light-Better Sight Bureau meeting of Jan. 29

"In this connection I propose to present for your consideration the results of some of the studies carried on in recent years by the United States Public Health Service on illumination in relation to eyesight in schools and industrial establishments."

Hinders Child Progress

The psychological effects on the school child who studies in inadequately lighted schools and homes was discussed by Clara Savage Littledale, editor of *Parents' Magazine*.

"Since 20 per cent of the children in grade schools and 40 per cent of those who graduate from college have damaged eyesight," said Mrs. Littledale, "it is apparent that somewhere along the line we parents have fallen down in providing proper facilities for our children.

"If a child finds it difficult to see it may interfere with his progress in school. If he thinks himself stupid, then others will think likewise. Result, an inferiority complex that may stay with the child throughout life.

"As parents we can at least see that the lighting facilities are correct at home and that our children use them when reading and studying. By all means we should not let them sprawl all over the floor to read the 'funnies' in the evening newspaper.

"It isn't that it is hard to secure right lighting in most of our homes or that expense prohibits it. It is simply that as a nation we are not well-informed on the subject, not conscious enough of our need for better lighting and how to get it. The lighting of most homes could be rearranged and reinforced with practically no added expense but with immeasurable eye-relief to every person in the family.

"Don't think for a minute that because a person is young his eyes are so good that it doesn't matter what light he has for reading or working. It is in the early, formative years of a child's life that good reading habits should be taught, and that eye-strain should be avoided in order to insure serviceable sight for life."

New Lighting Tools for Optical Interests

M. J. Julian, president, Better Vision Institute, speaking briefly on The New Light Prescribing Technique, said:

"The optical market is estimated at $135,000,000 a year which does not include the prices paid for examinations to 20,000 prescribers in the profession. We have no way of determining that figure but it is roughly estimated to be a total of $125,000,000. The significant point in that respect is that approximately 5,000,000 people a year go to have their eyes examined.

"The subject of light prescribing we believe is a proper element in eye examination and it is up to the optical industry to handle it in a purely scientific manner. During this past six months we have been working with other groups in an attempt to build a light prescribing technique that is entirely sound and fair so that each of our eyesight specialists will take the idea, incorporate it in their own examining routine and do it in a scientific manner. Contributions on this technique have come from Mr. Earl Canfield and Doctors Feree-Rand. This is the first announcement that has been made on the subject of light prescribing technique. As an organization representing wide interests in the optical industry we are not only committed to this light prescribing technique in a man sized way but we are most anxious to have the entire profession adopt it, and adopt it as quickly as possible. We hope the Better Vision Institute can endorse this light prescribing technique whether there are one or two sets of equipment and through its own manufacturing members and their distributors make it available to every man in the profession at a price which cannot be resisted.

"We believe that this new equipment will do a pretty good job and with some additional refinements will give us exactly what we want for all practical purposes. We believe this new light prescribing technique is an extremely important advancement in our business; one that permits us to render still more effective service in eye examinations and particularly ties up our industry in the broad national Better Light-Better Sight program for eyesight conservation."

Necessarily Cooperative

James S. Wolf, president, New York Paint, Varnish & Lacquer Association, said: "The paint and varnish industry and the electrical, optical and other interests which are encouraging the movement for better light-better sight have a mutual fellowship in a business promotion campaign which has the added merit of being a public service. 'In the public service' has long been a slogan of the organized paint, varnish and lacquer industry. It has been exemplified in the promotion of the National Clean Up-Paint Up-Fix Up Campaign—a movement which in effect is balanced reciprocation between altruism and good business, and in the Save the Surface Campaign, which educates the public to conserve the value and attractiveness of property. There is nothing hypocritical about this; it is simply an exposition of what, in this age, we have come to recognize as 'enlightened self-interest'—the interdependence of commercial and public welfare. No business can permanently endure unless it performs a service which in the long run is a contribution to the advancement of civilization.

"The Better Light-Better Sight Campaign fits this concept perfectly. Of all the evil things which came out of Pandora's box, defective eyesight is one of the most generally vexatious to the human race, and anything we can do to conserve and improve eyesight and eye comfort in the promotion of our businesses presents a dual opportunity for service—a service to the public and to ourselves.

"All of us who are in business are naturally prone to become 'product minded.' In other words, we often find ourselves too close to the things we make and sell to see them in their larger perspective, and such short vision, when it exists, retards our progress. It has been well said that when a storekeeper acquires real vision, he is on the way to becoming a merchant, and a merchant, in the true sense, is a business men who keenly recognizes the relationship of his business to the public interest. It is my feeling that in this Better Light-Better Sight movement we would all sacrifice much of our business dignity, and would dull the edge of our appeal to the public, if we put it on a mere basis of selling electricity, electrical appliances, spectacles—or paint. The movement is something far bigger, far more significant than that. It is a practical, logical educational program to enable people to live better and more comfortably, with the intelligent and scientific use of our respective products. It is my earnest hope that this perspective will be firmly established and maintained by every interest engaged in the promotion of the campaign.

"We have been letting the public go on for years, blaming lighting systems in homes, stores, factories, and public buildings, including schools, for faulty illumination and consequent eyestrain, instead of directly prescribing a combination of the right light and the right paint. It is just plain sense. However, it is very strange that we have been content to give this relationship of light and paint only cursory instead of the very serious attention which is being given to it through the Better Light-Better Sight Campaign, and which it thoroughly deserves."

In Commerce and Industry

Julius Daniels, chairman of the Lighting Sales Committee, Edison Electric Institute, in his address, "Interpreting Better Sight in Commerce and Industry," said, "It seems to me that the time is not far distant when it will be just as fashionable to protect our eyes as it is to protect our figures. Its importance will be considered not alone from the standpoint of fashion but from the standpoint of public interest as well. Nor does it require too great a stretch of the imagination to contemplate that in all phases of our lives, as well as in the schools, an attempt will be made to insure the preservation of our eyesight through social legislation. The proper application of eye-correcting equipment and better seeing conditions is but a natural step in the evolution of such legislation designed to force protection on all people. I understand that in one great state the mandatory limits for better seeing conditions are already coincident with the minimum recommended for efficient operation, instead of simply limited to minimum requirements designed to insure safety.

"This change of philosophy with relation to the subject of eyesight examination and correction, lighting, and proper reflecting surfaces offers untold opportunities for a constructive interpretation of these great benefits in commerce and industry."

New Fixture Standards Necessary

A. L. Powell, Jr., president, Illuminating Engineering Society, speaking on the subject of Scientific Illumination said, "We recognize that we have many important jobs to do. One, for instance, is the matter of residential lighting fixtures. We all deplore the present state of the fixture industry from a business standpoint and also from the standpoint of lighting in the home. I, for one, have always been a believer in fixtures as light sources. I have never been able to become as fond of the portable lamp as the women are.

"Why have the fixtures gone into disfavor? Our fixture industry has not in general supplied equipment which will

give people comfortable, adequate and well distributed lighting.

"They have used, by and large, the same molds, patterns, shapes and forms as they used back in the days of the gas lamp. You all remember that the first electric fixtures were combination ones, sockets were attached to old gas chandeliers. Finally we had an electric light fixture with bare bulbs. They were not so bad in the days of the carbon lamp. . . . However, there must now be developed a brand new technique which our industry in general has not yet grasped.

"We in the Illuminating Engineering Society can do something in the way of working with the fixture industry. We can at least give basic principles that they can build around. It can be published in the catalogues that these units will comply with IES standards of home lighting.

"There is better lighting in offices, banks, theaters and even factories than there is in our homes. There is too much junk being sold for the home such as candlestick brackets that are never used after they have been installed. Of what does good lighting consist? First of all, no kind of lighting is satisfactory unless it provides enough illumination. Of course the requirements vary as to use. Secondly, brightness must be kept low. Bright lighting units in the field of view are objectionable.

"There are five factors which determine glare:

1. The intrinsic brightness of the source.
2. The total volume of light coming toward the eye.
3. Contrast with the background. The light must be distributed to suit the conditions.
4. The color of light must be pleasing.
5. Position of light source in field of view.

"If fixtures are made available which control and do all these five things well and are artistic at the same time, they can be sold and will be used.

"Scientific illumination will then, through properly designed home lighting equipment, be contributing its full share toward the objectives of the Better Light-Better Sight Program—namely, 'better seeing' conditions."

"What I See"

"I think this is one of the biggest things that we have ever laid our hands to," Dr. G. W. Allison, field representative of the Edison Electric Institute, affirmed. Continuing, he said, "Tremendous, when you stop and take into consideration all of the things possible for us. For the electrical industry, what do I see? I see this, and I am not saying *if* this program succeeds, I am saying *when* it succeeds—the homes of this country will use more kilowatt hours for lighting alone than they are using now for all purposes. Maybe that is visionary but that is what I see. When this program succeeds, I see a considerable decrease in defective vision which reduces misery, increases comfort and happiness, reduces waste in manufacturing, increases production in manufacturing, reduces taxes, increases the efficiency of our public school system, and I think that *is* something. I see it increasing our fund of knowledge in our approach to solving home problems.

EXAMPLES of BILLBOARD POSTERS Used by UTILITIES
DIRECT BY MAIL PIECES
TYPICAL NEWSPAPER ADS for PAINT DEALERS
No. 53
BETTER VISION INSTITUTE DISPLAY of BETTER LIGHT-BETTER SIGHT PROMOTIONS
HIGH SPOT
HELP
The First Local Cooperative Organization
SIGHT SAVING COUNCIL of Cleveland

"One thing I see is that this is not a campaign. It cannot be a campaign. This is a new approach to the subject of 'better seeing.' It means a permanent program. It means a re-education of this entire industry, a re-education of everyone here today in the application of lighting. So it is not a campaign, it is here to stay.

"Another thing I see is that this whole thing meets a tremendous human need, and as such it gives us one of the finest sales opportunities and sales advantages imaginable. You know I have heard it said concerning this Better Light-Better Sight activity that it was just another excuse for the power company to sell more kilowatt hours, and that it was just an excuse for the lamp manufacturers to sell more lighting equipment and I have also heard it said that it was just an excuse to start some one talking about the need of paint, and talking about the need of optical equipment. What if it is? Mr. Daniels remarked about this need in his paper and I agree with him thoroughly. What if it does increase the number of kilowatt hours, what if it does increase the sale of lighting equipment, increase the activity and sale of optical equipment and paint? Does that matter? Do you know of any human need that has ever been met without a commercial activity in connection with it? Particularly if that human need demanded sowing, planting, cultivating and reaping or production. Any human need that requires such activity is only met through commercial activity. Any human need today that is not being met is not being met because there is no commercial activity connected with such a need."

HOUSEHOLD ELECTRIC REFRIGERATOR SALES

BY YEARS

	1931	1932	1933	1934
Total United States	948,676	769,666	1,065,105	1,372,526
Maine	5,687	5,027	5,699	7,044
New Hampshire	3,797	2,771	3,900	4,884
Vermont	3,271	2,315	2,767	2,944
Massachusetts	39,792	34,103	53,436	52,322
Rhode Island	5,663	6,930	9,177	8,007
Connecticut	18,992	16,374	17,740	18,786
Total New England	77,202	67,520	92,719	93,987
New York	185,226	186,536	205,383	190,055
New Jersey	53,156	42,774	50,654	59,858
Pennsylvania	78,117	70,217	103,564	121,971
Total Middle Atlantic	316,499	299,527	359,601	371,884
Ohio	50,558	38,503	69,328	91,321
Indiana	24,829	14,011	22,863	35,551
Illinois	92,472	56,790	72,446	108,333
Michigan	28,477	25,443	33,694	54,092
Wisconsin	12,289	10,088	17,984	21,356
Total East, North Central	208,625	144,835	216,315	310,653
Minnesota	14,646	13,950	14,943	17,897
Iowa	11,460	9,364	14,013	20,677
Missouri	36,845	26,279	37,270	53,760
North Dakota	1,806	1,423	1,876	3,223
South Dakota	1,888	1,223	2,546	4,350
Nebraska	7,894	5,952	8,746	14,477
Kansas	9,498	7,400	12,145	21,541
Total West, North Central	84,037	65,591	91,539	135,925
Delaware	1,887	1,970	2,343	3,083
Maryland District of Columbia	28,748	26,095	27,432	38,595
Virginia	14,238	12,831	15,341	22,821
West Virginia	10,466	7,765	10,207	18,170
North Carolina	11,391	6,352	14,103	20,883
South Carolina	4,905	3,123	5,589	9,910
Georgia	10,220	6,738	11,828	29,363
Florida	11,149	7,177	10,575	17,591
Total South Atlantic	93,004	72,051	97,418	160,416
Kentucky	10,432	7,965	14,682	19,865
Tennessee	7,594	7,072	9,793	26,822
Alabama	6,244	4,565	9,785	16,914
Mississippi	3,268	1,793	3,327	5,182
Total East, South Central	27,538	21,395	37,587	68,783
Arkansas	4,210	2,992	5,553	9,350
Louisiana	5,714	4,399	7,587	10,008
Oklahoma	10,146	8,093	12,634	17,900
Texas	29,426	20,369	37,293	53,078
Total West, South Central	49,496	35,853	63,067	90,336
Montana	2,680	1,613	3,524	5,262
Idaho	2,847	1,517	2,311	4,457
Wyoming	1,882	677	1,408	2,337
Colorado	6,967	5,319	8,541	10,645
New Mexico	1,894	858	1,724	2,470
Arizona	3,622	1,490	2,418	3,857
Utah	4,446	2,941	4,444	6,005
Nevada	948	863	1,028	1,305
Total Mountain	25,286	15,278	25,398	36,338
Washington	8,138	5,312	11,807	18,438
Oregon	5,695	4,901	7,491	15,471
California	53,156	37,403	62,163	70,295
Total Pacific	66,989	47,616	81,461	104,204

Tabulated below are figures showing distribution of domestic electric refrigerators for the years 1920 to 1934 and by months 1931 to 1934:

SALES BY YEARS, 1920-1934 INCLUSIVE

1920*.....10,000	1925.....75,000	1930.....850,000
1921.....5,000	1926.....210,000	1931.....948,676
1922.....12,000	1927.....390,000	1932.....769,666
1923.....18,000	1928.....560,000	1933.....1,065,105
1924.....30,000	1929.....840,000	1934.....1,372,526

*Total sales up to and including 1920.

Hughes Award

(*Continued from page* 50)

ing the use of modern equipment in the home-kitchen, with its resulting revenue to the utility operating companies' domestic load.

The Prize—A Cup signifying the Award, to the winning Company.

One Thousand Dollars in cash. *Five Hundred Dollars* is to be awarded to the Commercial or Merchandising Executive, and *Five Hundred Dollars* to be divided among the retail sales directors and retail salesmen by the Commercial or Merchandising Executive in proportion to the way they have contributed to the Company activity in the promotion of Electric Range sales.

If a competing company is awarded the prize, which is not engaged in the actual merchandising of Electric Ranges, the *Five Hundred Dollars* for salesmen may be distributed at the discretion of the Commercial Executive either to members of his department working with outside agencies, or to these agencies themselves.

Basis of Award—The Judges in awarding the above prize will consider the following merits in the proportions as indicated:

1. Highest percentage of Electric Ranges (5 kw. or over) connected during the period starting Jan. 1, 1935, and ending Dec. 31, 1935, in proportion to the total number of wired homes *not* using Electric Ranges at the beginning of the contest (Jan. 1, 1935). (This appies to all installations in the community, and the replacement of obsolete types of ranges will be considered also.)
Value 60%

2. Creative sales and advertising plans.
Value 30%

3. The Method of Presentation will be judged with a value of 10%.

Reports should be simple and straight statements of facts, having in mind the points which the Judges will need in making the Award.

Registration—Utility operating companies wishing to enter this contest should signify their intentions on or before June 1st, to Edison Electric Institute Headquarters, 420 Lexington Avenue, New York City, reporting the number of domestic meters and the number of Electric Ranges connected to the lines as of January 1, 1935. Also please record the name of the responsible Commercial or Merchandising Executive.

Filing of Reports—All reports should be submitted to Institute Headquarters on or before April 1, 1936. Those bearing a post mark of that date will be considered. The Award will be made at the Annual Convention in 1936.

POWER SALES ITEMS

AIR CONDITIONING

"Tailor-Made Weather," by R. B. Purdy. Power, November, 1934, p. 604. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

Air conditioning is just a new setup of some of the old and familiar power units.

"Can the Heating Contractor Handle Air Conditioning?" by E. R. Troxell. Heating & Ventilating Magazine, November, 1934, p. 19. The Industrial Press, 148 Lafayette Street, New York City, Publishers.

The author believes he can and that he will go actively after the work as soon as he can be sure of performance.

"Air Conditioning Makes Possible A Windowless Small Office Building." Heating & Ventilating Magazine, November, 1934, p. 17. The Industrial Press, 148 Lafayette Street, New York City, Publishers.

"Choosing the Right Air Conditioning System," by A. Warren Canney. Heating, Piping & Air Conditioning, December, 1934, p. 508. Keeney Publishing Co., 6 North Michigan Avenue, Chicago, Ill.

Air conditioning methods, equipment and problems they present.

"Consulting Engineer Surveys Theater Heating and Air Conditioning—Finds Need for Modernization," by D. D. Kimball. Heating, Piping & Air Conditioning, December, 1934, p. 497. Keeney Publishing Co., 6 North Michigan Avenue, Chicago, Ill.

"Air Conditioning Extends Producing Area of Chocolate Factory." Heating & Ventilating Magazine, December, 1934, p. 28. The Industrial Press, 148 Lafayette Street, New York City.

BREWERIES

"Purchased Power in Breweries." Electrical World, Feb. 2, 1935, p. 34. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

Fallacies of exhaust steam, sources of waste, and flow charts show electricity to be economical for breweries.

"This Plant Will Pay Out in Four Years." Power, November, 1934, p. 593. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

Minnesota's largest brewery builds new power house and modernizes power service equipment.

CAPACITORS

"Saves with Capacitors," by G. H. Lineberry and T. F. Stradley. Electrical World, Jan. 19, 1935, pp. 27-28. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

A power survey of the Pittsburgh Equitable Meter Company plant showed that the savings made possible by a change from group drive to individual drive would not justify the expense. However, a power factor study resulted in the installation of a 300 kv-a capacitor. This power and power factor survey are described in this article.

DIESEL ENGINES

"Culpeper, Virginia, Installs Municipal Diesel Light Plant." Diesel Power, January, 1935, pp. 22-29. Business Journals, Inc., 192 Lexington Avenue, New York City, Publishers.

Power engineers who are faced with Diesel competition will find much of interest in this article regarding the installation cost of a Diesel plant, as well as estimates of fuel consumption per kilowatt hour and the provisions that must be made to insure continuity of service from a Diesel plant with no emergency utility service. The entire installation of this plant is outlined by the author of this article with a complete cost of the installation as made shown.

"Diesel Engines," by E. J. Tangerman. Power, January, 1935, p. 10. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

This article contains a general discussion of the development of Diesel engines during 1934. Popular fancy has been greatly attracted by the achievements in trains.

DISTILLERIES

"Power Plant Services for the Modern Distillery," by F. C. Gedge. Power Plant Engineering, November, 1934, p. 502. Technical Publishing Company, 53 West Jackson Blvd., Chicago, Ill.

Century Distilling Company of Peoria takes advantage of modern equipment to give economy and flexibility demanded of power services by today's distilleries.

ELECTRICAL EQUIPMENT

"Three-Field Direct-Current Generator," by T. R. Rhea. General Electric Review, November, 1934, pp. 509-513. General Electric Company, 1 River Road, Schenectady, New York, Publishers.

This type of equipment, when operated by an electric motor, is applicable for installations having wide variations in load demands such as power shovels, drag lines, oil well machinery, etc.

INDUSTRIAL ELECTRIFICATION

"Modern Milk Plant." Electrical Production, February, 1935, p. 9. Electrical League of Cleveland, Inc., Builders Exchange Building, Cleveland, Ohio, Publishers.

Plant totally operated by electricity requires only one hour for total processing of milk.

KILNS

"Electric Kiln Installed." Ceramic Industry, December, 1934, p. 295. Industrial Publications, Inc., 59 East Van Buren Street, Chicago, Ill., Publishers.

Hall China Company of East Liverpool, Ohio, have installed a circular kiln, heated by electricity.

LOAD CONTROL

"Pulp-Mill Load Control Pays," by W. D. Rigg. Electrical World, Jan. 19, 1935, pp. 24-25. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

In some plants the processes and equipment are adaptable to the control of power demands. This is particularly true in pulp and paper plants. In this article Mr. Rigg describes the method of load control used in the plant of the Longview Fibre Company.

MODERNIZATION

"How Industry Is Modernizing." Electrical World, Jan. 5, 1935, pp. 63-65. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

Substations, distribution, switching, metering, motorization, heat applications, lighting and control are being improved to secure production advantages.

POWER SALES

"Power Sales Results and Trends." Electrical World, Jan. 5, 1935, pp. 57-60. McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York City.

A summary of results achieved by thirteen operating companies in industrial districts.

RATES

"Obsolescence in Rates." Harvard Business Review, January, 1935, p. 179. McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York City.

Steps which should be taken on the obsolete railroad freight rates are in many ways applicable to present electric rates.

REFRIGERATION

"Water Vapor Refrigeration," by C. A. Rickner. The Aerologist, January, 1935, p. 11. Aerologist Publishing Co., Inc., 121 North Clark Street, Chicago, Ill.

The author of this article has outlined the development of water vapor refrigeration and the operating characteristics of the modern centrifugal compressors for use with this type of refrigeration. The discussion in this article of the theoretical horsepower required for refrigeration of this type as compared with ammonia compressors will be of interest to power engineers concerned with the application of refrigeration to air conditioning.

REVERSED REFRIGERATION CYCLE

"Reverse Cycle Air Conditioning." Electrical Production, January, 1935, p. 5. Electrical League of Cleveland, Inc., Builders Exchange Building, Cleveland, Ohio, Publishers.

Operation, using four small rather than one large compressor, in reverse cycle refrigeration proves to be effective for air conditioning.

"Heating a Building With Cold Water." The Aerologist, January, 1935, p. 12. Aerologist Publishing Co., Inc., 121 North Clark Street, Chicago, Ill.

This article outlines the reversed cycle of air conditioning equipment which has been installed and is now in operation in the new building of the Atlantic City Electric Company at Salem, N. J. It discusses the means of heating or cooling the building with the same equipment and also the efficiencies that are expected to be obtained by the use of this type of equipment. Power engineers will be particularly interested in this article, as it claims that for 20 kilowatts input to the driving motor a heat delivery equivalent to approximately 70 kilowatts expended in direct electric heaters will be obtained.

Third Annual Convention of Edison Electric Institute

The Third Annual Convention of the Edison Electric Institute will be held at the Mayflower Hotel, Washington, D. C., June 3-6, inc. Details of the Convention plans will be published in forthcoming issues of the BULLETIN.

Southeastern Electric Exchange Conference

Mr. J. W. Talley, Executive Secretary of the Southeastern Electric Exchange, advises that the Second Annual Conference of the Exchange will be held at the Forest Hills Hotel, Augusta, Ga., on April 18 and 19. The editor regrets that the date and place of this meeting was incorrectly reported in the December issue.

How to Increase the Usefulness of the Accountant

(*Continued from page* 54)

management. His success lies in his ability to read beyond the figures of his reports. There never was a report produced but what a little study by the accountant brought out some fact or factor that was not readily distinguishable on its face. Charting results shown by reports presents a much clearer picture, and the good accountant will resort to this method to prove his contentions. The compiling of voluminous reports and statements means little unless the reasons for the results they show can be explained.

Because of the very highly systematized accounting methods employed by most utilities it is very easy for the utility accountant to fall into a routine and not apply himself as he should. The wide-awake accountant will find that there is no end to the analysis he can make of the reports compiled. From the first of the month until the last he will discover that this task is never finished. This ability of being able to explain *why* is the one factor which really is indicative of the true accountant, and the more able he is in this manner the more valuable he is to his corporation and also to himself. The fact that the trend of the large organizations in the past few years toward selecting many of their executives from the accounting field is indicative of the importance placed upon the ability of the accountant, and the utility accountant who applies himself may look forward to a brilliant future.

CONTENTS OF THIS ISSUE

The Federal Trade Commission and So-Called Utility "Write-Ups" *By Bernard F. Weadock* 33
Other Factors Besides Rate Reductions Necessary to Load Up Excess Generating Capacity ... 36
Advance Notice on The Hughes Award for Next Year ... 36
Government and the Public Utilities ... *By Wendell L. Willkie* 37
Sales Training Contest Now On ... 43
Get Behind the Running Water Program ... 44
Interrupting Rating Factors ... 44
Municipal and Company Rates Compared ... *By William M. Carpenter* 45
Twelve Recent Awards of Edison Electric Institute Medal ... 48
Safety in Transportation ... *By C. N. Rakestraw* 51
How to Increase the Usefulness of the Accountant in the Public Utility Industry *By Arthur J. Murphy* 53
Bare Neutral for Interior Wiring ... 55
Better Light-Better Sight Bureau Turns First Milestone at Full Speed *By Glen R. Trumbull* 57
Household Electric Refrigerator Sales By Years ... 62
Power Sales Items ... 63

CONVENTIONS AND MEETINGS

FEBRUARY

11-13 Transmission and Distribution Committee, Statler Hotel, Buffalo, N. Y.
14 Insurance Committee, Pennsylvania Hotel, New York, N. Y.
18-19 Electrical Equipment Committee, Netherland Plaza Hotel, Cincinnati, Ohio.
21-22 Annual spring conference, Business Development Section, Northwest Electric Light and Power Association, Vancouver, B. C., Can.

MARCH

5-7 Sixth annual Greater New York Safety Conference, National Safety Council and Cooperating organizations, Pennsylvania Hotel, New York, N. Y.
19-22 Electrical Committee, National Fire Protection Association, c/o Electrical Association of New York, 46th & Lexington Ave., New York, N. Y.
21-23 Electrochemical Society, Inc., spring meeting, New Orleans, La.

APRIL

18-19 Southeastern Electric Exchange, Forest Hills Hotel, Augusta, Ga.
25-26 Missouri Association of Public Utilities, Kansas City, Mo.

JUNE

3-6 EDISON ELECTRIC INSTITUTE, Mayflower Hotel, Washington, D. C.
17-18 Accounting and Business Practice Section, Northwest Electric Light and Power Association, Portland, Ore.
19-21 The American Society of Mechanical Engineers, Hotel Gibson, Cincinnati, Ohio.
24-28 American Institute of Electrical Engineers, summer convention, Ithaca, N. Y.

OCTOBER

14-18 National Safety Council, Louisville, Ky.

PRIZE AWARDS FOR 1935

Readers of the BULLETIN are reminded that entries for the H. M. Byllesby Prizes, the B. C. Forbes Prize, the A. L. Lindemann Prizes and the James H. McGraw Prizes must be forwarded to the Secretary of the Edison Electric Institute, 420 Lexington Avenue, not later than March 1, 1935, for consideration by the Prize Awards Committee.

Presentations of accomplishments for consideration for the Charles A. Coffin Award, the George A. Hughes Award and the Thomas W. Martin Award must be forwarded to the Secretary of the Institute not later than April 1, 1935.

Detailed information on the several awards for 1935 to be administered by the Prize Awards Committee of the Edison Electric Institute has appeared in the October, November and December issues of the EDISON ELECTRIC INSTITUTE BULLETIN.